

NEW SPECIES OF LIZARDS, GENUS *STENOCERCUS* (IGUANIA: TROPIDURIDAE), FROM WESTERN ECUADOR AND PERU

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ABSTRACT. Three new species of *Stenocercus* (Iguania: Tropiciduridae) are described from northwestern Peru and southwestern Ecuador. *Stenocercus limitaris* new species is known from localities in El Oro and Loja provinces, Ecuador, and Tumbes and Piura departments, Peru. It is similar to species of *Ophryoesoides sensu* Fritts in having large posterior head scales and supraoculars and keeled ventrals. *Stenocercus latebrosus* new species is known from southern Cajamarca and western La Libertad departments, Peru, and is characterized by a pair of well-developed mite pockets on each side of the neck underneath the antehumeral and oblique neck folds. Such pockets are found elsewhere in *Stenocercus* only in *S. ornatissimus* and in some populations referred to *S. chrysopygus*. *Stenocercus stigmatosus*, new species, is known from central Cajamarca department, Peru. Males of *S. stigmatosus* have bold black spots covering the entire venter. Description of these species resulted in a revised conception of *Stenocercus ornatissi-*

mus (Girard), for which a lectotype is designated and brief notes are provided. It is definitely known only from Lima department, Peru. However, some populations in Ancash department (Peru) presently referred to *S. chrysopygus* may not be distinguishable from *S. ornatissimus*. In addition, some problems concerning geographic variation and the status of various populations referred to *S. chrysopygus* are outlined.

RESUMEN. Se describen tres nuevas especies de *Stenocercus* (Iguania: Tropiciduridae) del noroeste del Perú y el suroeste del Ecuador. *Stenocercus limitaris* nueva especie se conoce de localidades en las provincias El Oro y Loja, Ecuador, y los departamentos Tumbes y Piura, Perú. Esta especie es similar a especies de *Ophryoesoides* según Fritts al tener grandes escamas en la parte posterior de la cabeza, grandes supraoculares, y ventrales quilladas. *Stenocercus latebrosus* nueva especie se conoce del departamento Cajamarca septentrional y del departamento La Libertad occidental, Perú. Se caracteriza por un par de bolsillos acáridos bien desarrollados en cada lado del cuello debajo de los pliegues antehumerales y obliquos. Se encuentran tal bolsillos entre otras especies de *Stenocercus* solamente en *S. ornatissimus* y en algunas poblaciones atribuidas a *S. chrysopygus*. *Stenocercus stigmatosus* nueva especie se conoce de la parte central del departamento de Cajamarca, Perú. En los machos de *S. stigmatosus* manchas pronunciadas negras cubren todo el vientre. Las descripciones de estas especies resultaron en una idea revisada de *Stenocercus ornatissimus* (Girard), de la cual se escogió un lectotipo y se provee de notas breves. Definitivamente esta especie se conoce solamente en el departamento de Lima, Perú. Sin embargo, algunas poblaciones en el departamento de Ancash (Perú) que se refieren actualmente a *S. chrysopygus* no sean bien distinguidas de *S. ornatissimus*. Además, se resumen algunos problemas acerca de la variación geográfica y el estado de varias poblaciones atribuidas a *S. chrysopygus*.

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INTRODUCTION

This paper is part of an ongoing series to help clarify the systematic status and biogeography of herpetofaunal components of the Andes and adjacent areas of northwestern Peru and southern Ecuador. Previous papers described new species of snakes (Cadle, 1989), frogs (Cadle and McDiarmid, 1990) and lizards (Cadle, 1991; Cadle and Chuna, 1995) from the area. Clearly, the diversity of amphibians and reptiles in the area is significantly underestimated at present. Including the new species cited above, more than 18 new species have been described from the Cordillera Occidental of northwestern Peru and southern Ecuador in the last nine years (references cited above; Duellman, 1991;² Duellman and Wild, 1993; Orcés and Almendáriz, 1989; Wiens, 1993).

Similarly, the species diversity of many Andean genera of amphibians and reptiles is poorly known. One example is the lizard genus *Stenocercus* (Iguania: Tropicuridae), which is widely distributed in South America from the high Andes to the lowlands on either side. Although Cadle (1991) described five new species of *Stenocercus* from northern Peru, he pointed out that many new species of *Stenocercus* were known from existing collections and merely awaited description and that new species continued to be discovered at a high rate. This paper describes three new species from the western Andean slopes and western interandean valleys (Amazonian slopes) of northern Peru and southern Ecuador.

MATERIALS AND METHODS

All species described herein are assigned to *Stenocercus* Duméril and Bibron *sensu lato* (including *Ophryocossoides* Duméril), for reasons discussed by Frost (1992) and Cadle (1991). General descriptive protocols follow Cadle (1991), who gave definitions of *Stenocercus* scale, neck fold, and mite pocket terminology based in part on Frost (1992). Colors were recorded in the field in life and supplemented with color slides. Bilateral scale counts (e.g., subdigitals) were done only on one side (the left, unless it was damaged), except for holotypes, for which both left and right counts are listed (l-r). A summary of selected scutellational and qualitative characters for the new species and two previously described species emphasized herein are presented in Table 1.

All measurements are in millimeters. The abbreviation SVL refers to the head-body length, snout to vent. The configuration of neck folds and mite pockets vary considerably among species of *Stenocercus* and are useful in distinguishing species. The most important qualitative characteristics of these features used herein are the following, which are discussed more fully by Cadle (1991).

Neck Folds. Antehumeral fold—a more or less vertical fold immediately anterior to the forelimb insertion. Oblique fold—a neck fold more or less parallel to the antehumeral fold located laterally on the neck about midway between the forelimb insertion and the posterior border of the ear.

Posthumeral (Axillary) and Postfemoral Mite Pockets. Type 1—pocket absent; no skin modification. Type 2—rudimentary pocket manifested by skin modification, such as bare skin or a series of wrinkles, or a shallow depression lined with scales different from surrounding body scales. Type 3—similar to Type 2, but with an overhanging fold of skin or a thickened border. Type 4—a deep pocket, usually with a broad circular opening, whose

² Duellman (1991) described *Eleutherodactylus petrobardus* (Anura: Leptodactylidae) and stated that it inhabited the Pacific slopes of the Andes. However, the type (and only known) locality is east of the continental divide in the interandean valley of the Ro Chotano, and is thus Amazonian (not Pacific). The stated longitude of 76°57'W (Duellman 1991: 6) seems to be a lapsus for 78°57'W, given the other stated type locality information.

TABLE 1. SELECTED MERISTIC, MENSURAL, AND QUALITATIVE CHARACTERISTICS OF THE NEW SPECIES OF *STENOCERCUS* DESCRIBED HEREIN AND OF *S. ORNATISSIMUS* (GIRARD) AND *S. CHRYSOPYGUS* BOULENGER. QUANTITATIVE CHARACTERS ARE GIVEN AS RANGE FOLLOWED BY MEAN \pm 1 SD (MODE RATHER THAN MEAN GIVEN FOR SOME CHARACTERS). SAMPLE SIZES (N) ARE GIVEN AT THE TOP OF EACH COLUMN EXCEPT WHERE THEY VARIED FOR INDIVIDUAL MEASURES (N ADDED PARENTHETICALLY).

	<i>Stenocercus</i> <i>limatus</i> new species N = 44	<i>Stenocercus</i> <i>laticornis</i> new species N = 37	<i>Stenocercus</i> <i>stigmatus</i> new species N = 12	<i>Stenocercus</i> <i>ornatissimus</i> (Girard, 1857) N = 21	<i>Stenocercus</i> <i>chrysopygus</i> Boulenger, 1900 ¹ N = 22
Midbody scales	39–54 47.3 \pm 3.16 (N = 43)	38–57 44.2 \pm 4.19	49–57 52.7 \pm 2.27	49–60 52.6 \pm 3.03 (N = 18)	43–67 52.1 \pm 6.67 (N = 19)
Vertebral scales	40–52 45.7 \pm 2.54 (N = 43)	43–53 48.2 \pm 3.07 (N = 36)	51–61 56.4 \pm 3.09	52–59 55.4 \pm 2.38 (N = 18)	50–73 57.2 \pm 6.25 (N = 19)
Gular scales	17–23 20.1 \pm 1.28 (N = 43)	18–26 20.9 \pm 1.79	19–27 23.3 \pm 2.38	19–26 22.3 \pm 1.71	18–28 23.4 \pm 2.89 (N = 18)
Internasals	4 (rarely 5)	2–4 3 (N = 16), 4 (N = 20)	2–4 (mode = 4)	2–4 (mode = 4)	4 (rarely 3)
Supraoculars	3–5 (mode = 4)	5–7 (mode = 6)	4–5 (mode = 4)	4–6 (mode = 5)	5–7 (mode = 6)
Fourth finger	17–23	17–23	14–19	15–20	16–22
Subdigitals	19.7 \pm 1.26	19.3 \pm 1.37	17.5 \pm 1.38	17.8 \pm 1.34	18.9 \pm 1.63 (N = 19)
Fourth toe	24–32	23–28	24–29	20–29	22–29
Subdigitals	27.5 \pm 1.93	25.2 \pm 1.55	26.5 \pm 1.68	24.1 \pm 1.85	25.1 \pm 1.57 (N = 19)
Tail/total	0.66–0.71	0.63–0.70	0.64–0.67	0.64–0.70	0.63–0.70
Length	0.69 \pm 0.013 N = 16	0.67 \pm 0.015 N = 29	0.65 \pm 0.012 (N = 6)	0.67 \pm 0.021 (N = 10)	0.66 \pm 0.03 (N = 13)
Maximum size (mm)					
Males	97	76	68	61	75
Females	82	67	61	59	71
Posthumeral pocket	Type 4 (rarely Type 3)	Type 1	Type 1 (rarely Type 2)	Type 1	Type 1
Postfemoral pocket	Type 5 (rarely Type 4)	Type 1	Type 3 (rarely Type 4)	Type 1	Types 1–3 (mode = Type 2, but high frequency of Type 3)

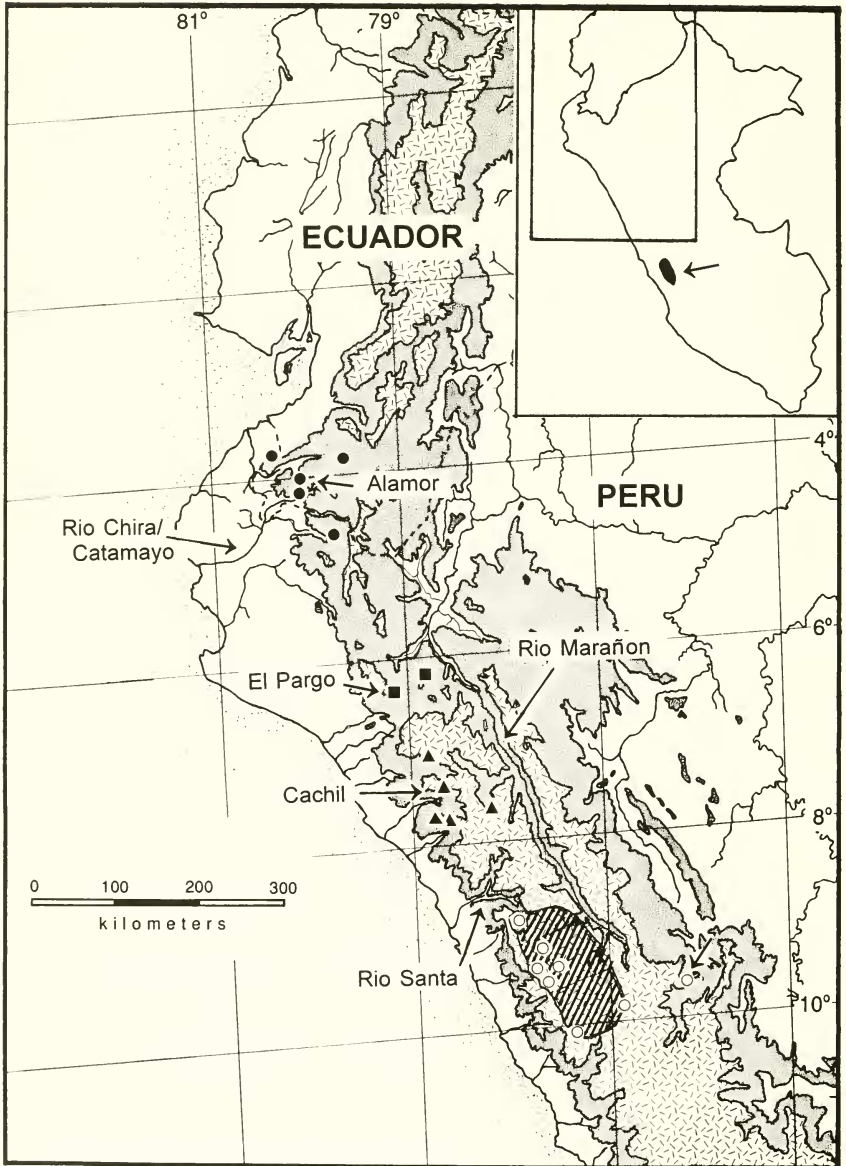
¹Fritts (1974: 44, 45) reported considerable variation in some meristic counts and coloration among populations he assigned to *Stenocercus chrysopygus* (e.g., midbody scale rows, for which he reported a range of 54–82, compared to 43–67 in my sample). The sample variances for scale counts of all specimens I examined are universally higher than those for the other species in this table, thus lending credence to higher variability in *S. chrysopygus*. I have not attempted to analyze this variation and the values reported are for all specimens combined, including those questionably referred to *S. chrysopygus* (*Specimens Examined*). Fritts' (1974) discussion of this species should be used to supplement my account. However, the increased variability and interpopulational differences could also indicate that more than one species is represented by the combined populations (see text).

depth is greater than half the diameter of its opening. Type 5—a deep pocket with a narrow, slit-like opening and a depth greater than half the diameter of its opening.

Angulate temporal scales are distinctly enlarged, keeled scales posterior to, and in

line with, the superciliary scales. When present, they form a distinct border between the posterior head scales and the lateral temporal scales, and they are morphologically distinguishable from these series (Cadle, 1991: 6, 7).

Coordinates for Ecuadorian localities



were taken from Paynter (1993). Those for Peruvian localities were obtained from Stephens and Traylor (1983), Lamas (1976), or from departmental maps produced by the Instituto Geográfico Militar, Lima. Additional locality information was taken from Stiglich (1922). Distributions of the new species and others emphasized in this paper are given in Figure 1.

Some of the specimens referred to herein are to be returned to the Museo de la Universidad Nacional Mayor de San Marcos (MUSM; Lima, Peru). These specimens are identified with Cadle field numbers as MUSM-JEC. I used other MUSM specimens before they were cataloged into that collection, and their MUSM numbers were supplied subsequently in correspondence. To avoid possible confusion, I provide my original field numbers for these specimens (the only attached tags when I was writing the descriptions).

Other institutional abbreviations are AMNH (American Museum of Natural History, New York), ANSP (Academy of Natural Sciences of Philadelphia), BMNH (The Natural History Museum, London), LSU-MNS (Louisiana State University Museum of Natural Science, Baton Rouge), MCZ (Museum of Comparative Zoology, Harvard University), MVZ (Museum of Vertebrate Zoology, University of California at Berkeley), and USNM (National Museum of Natural History, Washington, D.C.).

DESCRIPTIONS OF NEW SPECIES

Stenocercus limitaris

new species

Figures 2–5; Table 1

Holotype (Figs. 2, 3). **American Museum of Natural History (AMNH)**

22183. ECUADOR: Loja: Alamor [1,325 m; 04°02'S, 80°02'W]. Adult male obtained 22–30 August 1921 by G. H. H. Tate.

Paratypes. ECUADOR: EL ORO: Salvias [1,050 m; 03°45'S, 79°40'W], **AMNH 18311** (11 August 1920, H. E. Anthony). **LOJA:** Alamor (topotypes), **AMNH 18319** (3 October 1920, H. E. Anthony), **AMNH 22113–19, 22131–32, 22158–62, 22165–67, 22178–82** (22–30 August 1921, G. H. H. Tate); **AMNH 22223–29** (19 September 1921, G. H. H. Tate). Piñas, 8 mi. N of Alamor³ [3,600 ft. = 1,097 m] [04°01'S, 80°02'W], **AMNH 22215** (9 September 1921, G. H. H. Tate). Cruzpamba, 1,000 m [on the Río Celica, 04°10'S, 80°01'W], **MCZ 85083** (10 July 1965, D. Norton and P. Mattocks).

PERU: PIURA: Toronche (town at base of Cerro Aypate, approximately 16 km [airline] SE Ayabaca), 1,950–2,100 m [04°35'S, 79°32'W], **MUSM 16745–49** (JEC 10272–75, 10277, respectively), **MCZ 182245–48** (24 September 1991, J. E. Cadle). **TUMBES:** Quebrada Faical El Caucho, 24 km SE Pampa de Hospital, 600 m [03°49'S, 80°16'W], **LSUMNS 39444** (21 June 1979, T. S. Schulenberg).

Distribution (Fig. 1). Known from southwestern Ecuador (El Oro and Loja provinces) in the upper reaches of the Río

³This locality is not the Piñas in El Oro province shown on most maps of Ecuador and commonly listed in gazetteers (e.g., Chapinán, 1926: pl. XXX; Paynter, 1993: 157). Tate referred to the Piñas in Loja province as “Las Piñas” and reached it via trail from Alamor. A sketch map in Tate’s notes shows Las Piñas approximately due north of Alamor at 3,600 ft. elevation (Tate field notes in AMNH Herpetology archives, v. 23 for 7 September 1921).

Figure 1. Northwestern Peru and western Ecuador showing distribution of species of *Stenocercus* emphasized in this paper. Stippled areas are above 1,000 m and hatched areas are above 3,000 m. All known localities for the new species and their type localities are indicated (see text for precise type localities): *Stenocercus limitaris* (type locality: Alamor), dots; *Stenocercus stigmus* (type locality: El Pargo), squares; *Stenocercus latebrosus* (type locality: Cachil), triangles. Area shaded by diagonal lines between 8° and 10°S is the approximate known distribution of *Stenocercus chrysopygus* Boulenger (after Fritts, 1974), with localities for specimens examined in this study indicated by open circles. These include populations in western Ancash department questionably referred to *chrysopygus* (see text and *Specimens Examined*); note outlying eastern population in the Río Huallaga drainage (arrow at 09°46'S, 76°05'W). The approximate distribution of *Stenocercus ornatus* (Girard), as conceived in this paper (see text), is indicated on the inset map by solid shading (arrow).



Figure 2. Holotype of *Stenocercus limitaris* (AMNH 22183; male, SVL 91 mm).

Puyango and Río Alamor/Catamayo systems; from extreme northwestern Peru in upper reaches of the Río Quiroz system east of Ayabaca (Piura department); and from coastal drainages of Tumbes department, Peru. Ecuadorian localities are approximately 1,000–1,300 m and the Tumbes department (Peru) locality is 600 m. At Cerro Aypate near Ayabaca, Peru (Piura department), I observed *Stenocercus limitaris* between 1,930 m and approximately 2,200 m elevation.

Etymology. *Limitaris* is Latin meaning “on the border,” referring to the distribution of the species in the borderlands between Ecuador and Peru. It is used here as an adjective.

Data on the Holotype. Adult male. SVL, 91 mm. Tail length, 179 mm. Total length, 270 mm. Tail/total length, 0.66 mm. Mid-body scales, 43. Gular scales between the ears, 20. Internasals, 4. Subdigital scales on fourth fingers and toes, respectively, 21–20, 27–28. The tail is cracked 81 mm from the vent. The type is dull grayish brown, and most elements of the pattern, except the light antehumeral bar and the dark patch on the throat, are obscure.

Definition. A species of *Stenocercus* characterized by the following features: (1) Dorsal head scales keeled (occasionally multicarinate), juxtaposed, and somewhat protuberant; temporals keeled, imbricate. (2) Most posterior head scales larger than anterior ones with distinct interparietal, a pair of parietals, two pairs of postparietals, and a median pair of occipitals. (3) Internasals 4 (rarely 5). (4) One row of supraculars distinctly enlarged. (5) Two canthals on each side between the superciliaries and the postnasals or nasals. (6) A single strongly keeled angulate temporal



Figure 3. The characteristic throat pattern of adult males of *Stenocercus limitaris* (holotype, AMNH 22183).

on each side, without projecting blade, in contact with the posterior-most postparietal. (7) Anterior gulars smooth to weakly keeled (keels more prominent in males than in females); posterior gulars strongly keeled. (8) Parietal eye distinct. (9) Neck folds absent. (10) Dorsal and ventral body scales imbricate, mucronate, and strongly keeled. (11) Vertebral row continuous, bearing a strongly projecting serrate crest in adult males, weakly projecting in females. (12) Deep posthumeral and postfemoral pockets, Types 4 and 5, respectively. (13) Scales of posterior thigh imbricate, keeled. (14) Tail strongly compressed in adult males and with a serrate dorsal crest continuous with that of the dorsum; tail weakly compressed in adult females. (15) Dorsal coloration of males brown with or without distinct chevrons, a distinct white vertical scapular stripe, and a blackish transverse bar or blotch on the throat (Fig. 3); females similar but lacking the throat blotch.

Diagnosis. In having large posterior head scales, large supraoculars, and keeled ventral scales, *Stenocercus limitaris* matches the external criteria used by Fritts (1974) to diagnose *Ophryossoides* as distinct from *Stenocercus* (discussed by Frost [1992] and Cadle [1991]). Of species of *Stenocercus* having this combination of features, only *S. iridescens* occurs west of the Andes and, of the other species, only *S. huancabambae* occurs in adjacent parts of northern Peru (Cadle, 1991).

Stenocercus limitaris (Fig. 4) is distinguished from *S. iridescens* (characteristics in parentheses; see Cadle, 1991: fig. 10) in having smaller head plates that are keeled, wrinkled, or multicarinate (head plates large, smooth); generally 5 or 6 scales across the top of the head in a transverse row between the canthals, all more or less equal in size (2–4 scales, including two greatly enlarged median scales); and generally a continuous ring of small scales separating the enlarged supraocular rows from the median head scales (ring often

incomplete but always reduced to tiny scales).

Stenocercus limitaris is distinguished from *S. huancabambae* (contrasting characters in parentheses; see Cadle [1991: fig. 8]) in having 2 median posterior occipital scales (usually 3), 2 canthals (1), lacking a row of small scales medial to the angulate temporal scale (present; see Cadle [1991: 31, 32] for discussion), having a black transverse bar or large blotch on the throat in males (black longitudinal streak), and having a short antehumeral light bar that ends on the base of the forelimb (antehumeral bar longer, extending onto upper forelimb).

Other species of *Stenocercus* with enlarged posterior head scales and keeled ventrals [*aculeatus* (O'Shaughnessy), *caducus* (Cope), *dumerilii* (Steindachner), *erythrogaster* (Hallowell), *fimbriatus* Avila-Pires, *scapularis* (Boulenger), *tricrostus* Duméril] occur on the Amazonian slopes or lowlands and differ from *S. limitaris* in coloration and in having dorsolateral (as well as vertebral) crests on the body (see Avila-Pires, 1995; Cadle, 1991: 36, 37).

Stenocercus limitaris differs from other species of *Stenocercus* occurring in Peru and Ecuador in having the combination of deep posthumeral (Type 4) and postfemoral (Type 5) pockets, enlarged posterior head scales, a projecting vertebral crest (especially in adult males), and keeled ventrals. Three species of southern Ecuador and northern Peru, *S. rhodomelas*, *S. ornatus*, and *S. percultus*, have deep posthumeral pockets and projecting vertebral crests; these species are distinguished from *S. limitaris* by aspects of coloration and in having smooth ventrals (see Fritts, 1974; Cadle, 1991: 27).

Description. *Head.* Dorsal head scales juxtaposed, and keeled, wrinkled, or multicarinate (Fig. 4). Supraoculars, in particular, tend to be multicarinate. Keels or wrinkles much more prominent in juveniles than adults. Rostral in contact with first supralabial, first lorilabials, postros-

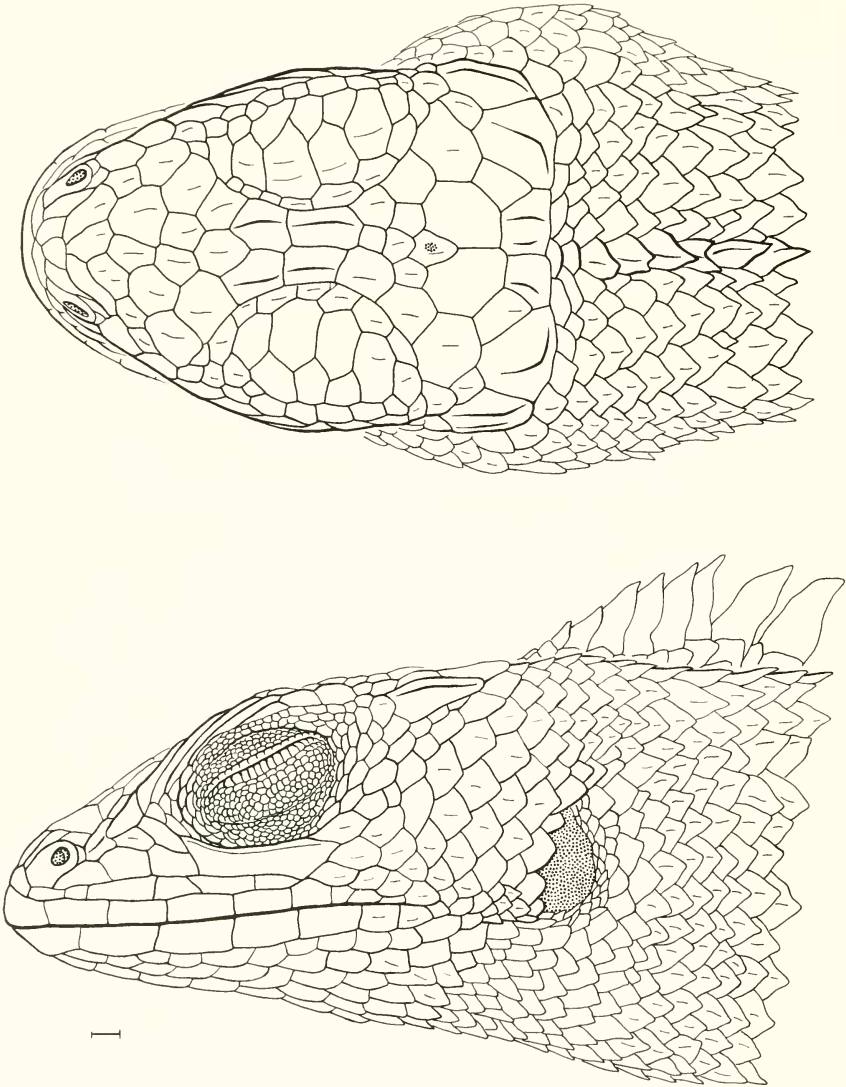


Figure 4. *Stenocercus limitaris* (holotype, AMNH 22183). Dorsal and lateral views of head scales. Bar = 1 mm.

trials, and occasionally the internasals. Medial postrostrals short, irregularly trapezoidal, occasionally failing to meet on the midline. Two canthals anterior to the superciliary series, the anterior ones in contact with the nasals or separated from them by tiny scales. Four elongate superciliaries overlapping posteriorly, followed by 2 or 3 shorter posterior superciliaries overlapping in the reverse direction. Internasals 4 (rarely 5). One row of enlarged supraoculars. Parietal region with distinct interparietal, a pair of parietals, two pairs of postparietals, and a pair of occipitals. Parietals are in contact on the midline, but both pairs of postparietals are separated by the occipitals; anteromedial postparietals less than half the size of the posterolateral postparietals. Parietal eye visible.

Temporal scales keeled, imbricate. Lateral temporal scales separated from posterior dorsal head scales on each side by a single, elongate, strongly keeled angulate temporal scale. The angulate temporal is in contact with the second postparietal and one or two other posterior head scales (not separated from enlarged posterior head scales by a row of small scales, as in some other species of *Stenocercus*). Although the angulate temporal is strongly keeled, it does not bear a projecting vane as in *S. iridescens* and *S. huancabambae* (Cadle, 1991).

Anterior gulars weakly keeled or smooth, those posterior to the level of the anterior edge of the ear strongly keeled. Mental in contact with first pair of postmentals and first pair of infralabials. Enlarged postmentals 4 or 5 on each side, the first pair in contact medially.

Neck and Body. Dorsal and lateral scales of neck and body imbricate, mucronate, strongly keeled. Vertebral row produced into a prominent projecting serrate dorsal crest in adult males that is continuous from the nuchal region to approximately the basal one-third of the tail; crest projecting, but less so, in females. No dorsolateral crest. Pre-auricular fringe well developed; posterior border of ear smooth.

Ventral body scales mucronate, strongly keeled, approximately the same size as the dorsals.

Neck Folds. Distinct neck folds absent. At most, very slight indications of antehumeral and dorsolateral folds.

Tail. Tail strongly compressed in adult males, less so in females; bearing projecting crest continuous with that of the body. Dorsal and ventral scales similar to those of the body.

Limbs. Dorsal and ventral scales of fore- and hindlimbs, and posterior thigh strongly keeled, mucronate. Supradigitals and subdigitals of both limbs keeled. Plantar and palmar scales strongly keeled.

Posthumeral and Postfemoral Mite Pockets. Posthumeral and postfemoral mite pockets deep (Types 4 and 5, respectively).

Size and Proportions. Largest male (AMNH 22183) SVL 91 mm. Largest female (MCZ 182246) SVL 82 mm. Tail 66–70% of total length.

Coloration and Pattern in Life. **Adult Males.** I have not collected adult males of *Stenocercus limitaris* but at Toronche (Piura department, Peru) I observed an adult male and one apparently subadult male. The adult male had a projecting vertebral crest and a black bar below the eye. There appeared to be two wide black vertical bars in the shoulder region highlighting the light scapular stripe. The subadult had a black suborbital bar and a black scapular spot bordering the posterior edge of the scapular stripe. The black spot did not have a distinct posterior border, but faded into the brown flank color. A series of dark middorsal chevrons on the brown ground color was evident in the subadult.

Adult female (Fig. 5, based on MCZ 182246 from Toronche, Piura department, Peru) SVL 82 mm. Top of head and dorsum medium brown. Dorsum with brown chevrons, very indistinct anteriorly, becoming discrete on posterior dorsum, pelvis, and tail. Side of neck and flanks rich yellowish brown. Loreal region and upper labials dull yellowish white. Small scales

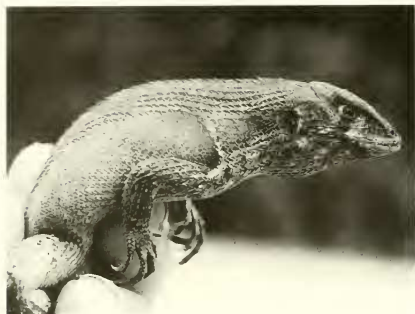


Figure 5. Adult female of *Stenocercus limitaris* in life (MCZ 182246 from Toronche, Piura department, Peru). Note the lack of neck folds, the light antehumeral bar ending at the base of the forelimb, and the dark subocular bar characteristic of this species.

dorsal and posterior to angle of mouth orangish. Black vertical bar across eyelids continuing to upper labials. Light yellowish vertical stripe in scapular region. Dorsal surfaces of limbs brown; thighs indistinctly barred with darker brown. Throat and pectoral region grayish white washed with yellowish. Belly, ventral limbs, and ventral tail grayish tan, unmarked. A vague light (yellowish brown) stripe at upper edge of posterior surface of the thigh, slightly outlined with darker pigment (which is the only reason it is at all discrete).

Another female (MUSM 16749, SVL 67 mm) and two subadults (MCZ 182247–48, SVLs 45–50 mm) from the same locality as MCZ 182246 are similar to the latter except the colors are duller. The dorsal chevrons in the two subadults are much more distinct than in the two larger females and the flanks of the subadults are darker. Another female (MCZ 182245, SVL 72 mm) has much dark gray pigment on the ventral surface of the head and neck; the pigment is denser on the neck, forming an indistinct dark collar on the throat. The stripe on the posterior surface of the thigh is obvious on all individuals but more evident in the subadults.

Coloration in Preservative. Dull grayish

brown or brown with darker brown markings. The suborbital dark bar, light antehumeral bar, and dark blotch on the throat of males usually are evident but other pattern elements are obscure. Some females retain dark mottling on the gular and ventral neck regions. Some preserved males (e.g., MCZ 85083, LSUMNS 39444) and females (e.g., AMNH 22160) have light spots on a generally darkened pectoral region. The light postfemoral stripe is retained in well-preserved recent specimens of both sexes (all paratypes from Peru and from Cruzpamba, Ecuador) and in many older specimens. It is evident as an indistinct light stripe or series of spots bordered by slightly darker scales.

Scale Counts and Qualitative Features (Table 1). *Stenocercus limitaris* has low numbers of body scales compared to many species of *Stenocercus*, indicating that the scales are large for a lizard of this size. The scale counts, size, and the posthumeral and postfemoral mite pockets are very similar to those of *S. huancabambae* (Cadle, 1991: table 1).

Sexual Dimorphism and Geographic Variation. *Stenocercus limitaris* exhibits strong sexual dimorphism. Males have a strongly projecting serrate vertebral crest from the nape well onto the tail. In females the crest is present but very reduced. The sexes also differ in coloration, although the lack of detailed observations on male colors in life make this difficult to assess. Females lack the dark blotch on the throat characteristic of males, and the light scapular stripe is more prominent in males because of its contrasting border of dark pigment. Males attain a slightly larger size than females (Table 1) and are somewhat more robust. Males and females do not differ significantly in meristic counts.

Only two populations (Alamor, Ecuador, and Toronche, Peru) are represented by enough specimens to assess interpopulation differences statistically. Although separated by only a distance of approximately 80 km (airline), the terrain in this area is heavily dissected by rivers flowing

from the Andes. The great Río Chira/Catamayo system and its tributaries separate Alamor and Toronche (Fig. 1). The only significant meristic difference between these two populations is the mean number of midbody scale rows ($\bar{x} = 46.3 \pm 2.83$ vs. 50.1 ± 2.42 for Alamor and Toronche, respectively; $t = 3.63$, $P < 0.001$). Despite statistical significance, the ranges of midbody scales for these populations (39–53 vs. 47–54, respectively) entirely overlap.

Natural History. Most of the type series of *Stenocercus limitaris* was obtained by G. H. H. Tate while collecting birds and mammals for the American Museum of Natural History in western Ecuador (Chapman, 1926). Tate worked at the type locality and nearby sites from 14–31 August and 4–20 September 1921 (Chapman, 1926: 16). Chapman (1926: 703) described Alamor thus: “altitude 4550 ft. [1387 m], a small town lying along a ridge between the Ríos Tumbes and Alamor. Heavy subtropical forest lies west and north of Alamor and humid tropics may be quickly reached in the valleys below.” H. E. Anthony, who worked at Alamor 30 September–5 October 1920, described the area as follows (H. E. Anthony, unpublished summary of field work in Ecuador, Mammalogy Department, AMNH):

Alamor . . . is on the border line between the arid tropical and the humid tropical. The great forests which clothe the western Andes have their eastern limit at this point, and with their southern limit as well not much to the south of Alamor. West of this little hill it is possible to enter splendid tropical forest To the north the forest reaches greater elevations and much of it is subtropical to temperate.

Since the 1920s, the great tropical and temperate forests of western Ecuador described by Chapman and Anthony have been destroyed (Dodson and Gentry, 1991).

I have few natural history observations on *Stenocercus limitaris*. The tag of LSUMNS 39444 states that it was collected in humid deciduous forest. At Toronche (Piura department, Peru) all *S. limitaris* I

observed were in a heavily disturbed area of second growth, pastures, and agricultural land. However, the native habitat may have been a more humid forest, as the summit of nearby Cerro Aypate was covered with a wet montane forest as late as 1991 (Gentry, 1995; personal observations). Most of the lizards were among thickets and fencerows along trails or roads and took refuge in debris piles or under objects on the ground. One individual took refuge in a crevice in a vertical roadcut, but in general these animals do not seem to be climbers. They are wary lizards and are difficult to approach when they are active.

Around the base of Cerro Aypate I observed many individuals of *Stenocercus limitaris*, including adults of both sexes, on a hot afternoon with bright sun. However, the following day was overcast and somewhat cool, and few lizards (all females and subadults) were seen. Local informants stated that they are out in abundance only on very hot days.

Stenocercus limitaris is known to be sympatric with other species of *Stenocercus* at Quebrada Faical (Tumbes department, Peru), where *Stenocercus iridescens* also occurs,⁴ and at Alamor (type locality),

⁴ Specimens of *Stenocercus iridescens* from Quebrada El Faical (LSUMNS 39443, 39445–47, 39451) and another from a nearby locality (LSUMNS 26989) differ from typical *S. iridescens* in lacking distinct black markings on the throat. The El Faical specimens show a general darkening of the throat and pectoral region, with large unpigmented spots across the pectoral region. This is unusual for *S. iridescens* and these specimens were thought by E. E. Williams (personal communication) to represent a distinct species. However, my survey of *S. “iridescens”* in the MCZ suggests much variation in throat pattern and also the degree of keeling on the ventral scales, perhaps attributable to a combination of preservation artifact and geographic or other significant variation. Specimens from the Río Cazanga valley (Loja province, Ecuador; MCZ 85089–90, 131822) are similar to the El Faical specimens in having smooth ventrals, but MCZ 85089–90 (adult males) have a dark median spot on the throat, unlike the transverse band or paired blotches characteristic of typical *iridescens*. Other specimens (e.g., MCZ 145370; Pichincha prov-

where *S. carrioni* also occurs (MCZ 34866, 133220; exchanged to MCZ from Tate's AMNH collections, where a large series of *carrioni* resides [Fritts, 1974]).

Remarks. *Stenocercus limitaris* was recognized as new by P. E. Vanzolini and E. E. Williams many years ago on the basis of Tate's collections and others from Ecuador. They had labeled specimens from some collections, perhaps including some not studied herein, as "*Stenocercus orcesi*," which they had intended to name this species.

ince, Ecuador) have strongly keeled ventrals and a generally dark venter. Until variation in *iridescens* is more thoroughly studied, I hesitate to attribute significance to these differences.

Stenocercus latebrosus
new species

Figures 6–12; Tables 1–3

Holotype (Fig. 6). **Museo de Historia Natural de San Marcos (MUSM) 16744** (field number JEC 13026). **PERU: CAJAMARCA:** Bosque de Cachil, approximately 3 km (airline) SE Contumazá, 2,500 m [07°23'S, 78°47'W]. Adult male collected 17, 18 August 1994 by John E. Cadle, Pablo Chuna, and Segundo Leiva.

Paratypes. **PERU: CAJAMARCA:** Same data as the holotype, **MUSM-JEC 13014, 13021–22, 13024, 13027, 13029; MCZ 182236–41.** Same locality as the holotype but 2,400–2,420 m, **MCZ 178040–43** (27 July 1993, P. Chuna, P. Lezama, S. Leiva); **MCZ 178044** (17 May

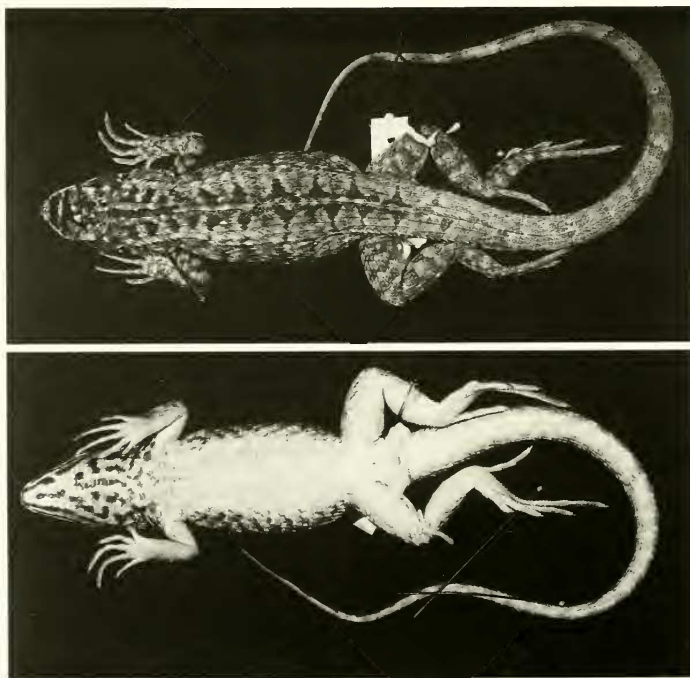


Figure 6. Holotype of *Stenocercus latebrosus* (MUSM 16744; adult male, SVL 68 mm). Dorsal and ventral views.

1993, P. Chuna, P. Lezama); **MCZ 178048-49**, **MUSM-JEC 10323** (28 September 1991, J. E. Cadle and P. Chuna); **MCZ 178268-70** (13 December 1993, P. Chuna). Carabamba, Provincia Cajabamba [approximately 07°33'S, 78°15'W],⁵ **MCZ 154240** (2 November 1967, P. M. Lujan). San Pablo [2,400 m;⁶ 07°07'S, 78°50'W], **BMNH 1900.3.30.14** (5 November 1899, P[erry] O. Simons). **LA LIBERTAD**: 5 mi. SW Otuzco, 8,000 ft. [2,440 m; approximately 07°55'S, 78°33'W], **MVZ 119233-36** (31 August-3 September 1969, R. Hilborn, C. B. Koford, and M. Leong). Mountain ridge above Sinsicap, 2,400-2,600 m [07°50'S, 78°45'W], **MUSM-JEC 13836**, **13838-40**, **MCZ 182242-44** (9 July 1995, J. E. Cadle, P. Chuna, S. Leiva, and P. Lezama).

Referred Specimens. Specimens from the vicinity of Otuzco (La Libertad department, Peru) appear to be relatively common in various collections, but I have not made a comprehensive survey of all specimens and have specifically examined only those listed as types. Fritts (1974) based his discussion of *Stenocercus ornatissimus* primarily on specimens (apparently of *S. latebrosus* from near Otuzco (KU 134351-78, not examined in this study). His photograph of "*ornatissimus*" from Otuzco (Fritts, 1974: 78, fig. 25) in

actuality appears to be *latebrosus*, as indicated by the distinctively patterned head and dorsum. *Stenocercus ornatissimus* and *S. latebrosus* are very similar (see below), but differ in several qualitative characters. *Stenocercus ornatissimus*, in my conception, is presently known only from Lima department, far south of the only known localities of *latebrosus* in Cajamarca and La Libertad departments (Fig. 1).

Distribution (Fig. 1). *Stenocercus latebrosus* is known from the Cordillera Occidental of the Andes in southern Cajamarca and western La Libertad departments, Peru (Pacific slopes drained by the Río Chicama and Río Chilete); and from the main portion of the Cordillera Occidental in extreme southeastern Cajamarca department (Amazonian slope). The known elevational range is approximately 2,400-2,600 m.

Etymology. The species epithet *latebrosus* is a Latin adjective meaning "full of hiding places," an allusion to the deep mite pockets concealed among the neck folds of this species.

Data on the Holotype. Adult male with everted hemipenes. SVL, 68 mm. Tail length, 147 mm. Total length, 217 mm. Tail as a percentage of total length, 68%. Midbody scales, 41. Gular scales between the ears, 20. Internasals, 4. Subdigital scales on fourth fingers and toes, respectively, 19-20, 28-29.

Definition. A species of *Stenocercus* characterized by the following features: (1) at least posterior scales on top of head keeled, juxtaposed; temporals keeled, slightly imbricate (Fig. 7). (2) No distinct parietals, postparietals, or occipitals; posterior head scales small; interparietal small, irregular, indicated by visible parietal eye. (3) Internasals usually 3 or 4. (4) No supraocular row distinctly enlarged, although supraoculars vary in size. (5) Two canthals on either side between the superciliaries and the postnasals. (6) No distinct angulate temporals; temporal and posterior head scales strongly keeled. (7) Gulars and postmental series smooth. (8) Parietal

⁵ MCZ catalogs record La Libertad department for this locality but Provincia Cajabamba is in extreme southeastern Cajamarca department adjacent to La Libertad.

⁶ Simons' field tag attached to the specimen and the BMNH catalog give 3,000 m as the elevation of San Pablo. However, Stephens and Traylor (1983) give 2,365 m and I recorded 2,400 m when I visited San Pablo in 1994. Perry O. Simons collected specimens (primarily mammals) from the Andes of Ecuador, Peru, Bolivia, and Argentina for the British Museum (Natural History) from November 1899 to November 1901. The herpetological collections were described by Boulenger (1899, 1900, 1901), the mammal collections by Thomas (1901, 1902a, b), and the bird collections by Chubb (1919). Chubb (1919) gives an itinerary and list of Simons' localities based on his diaries. The date of collection for BMNH 1900.3.30.14 is that given in Chubb's itinerary for the date when Simons was in San Pablo.

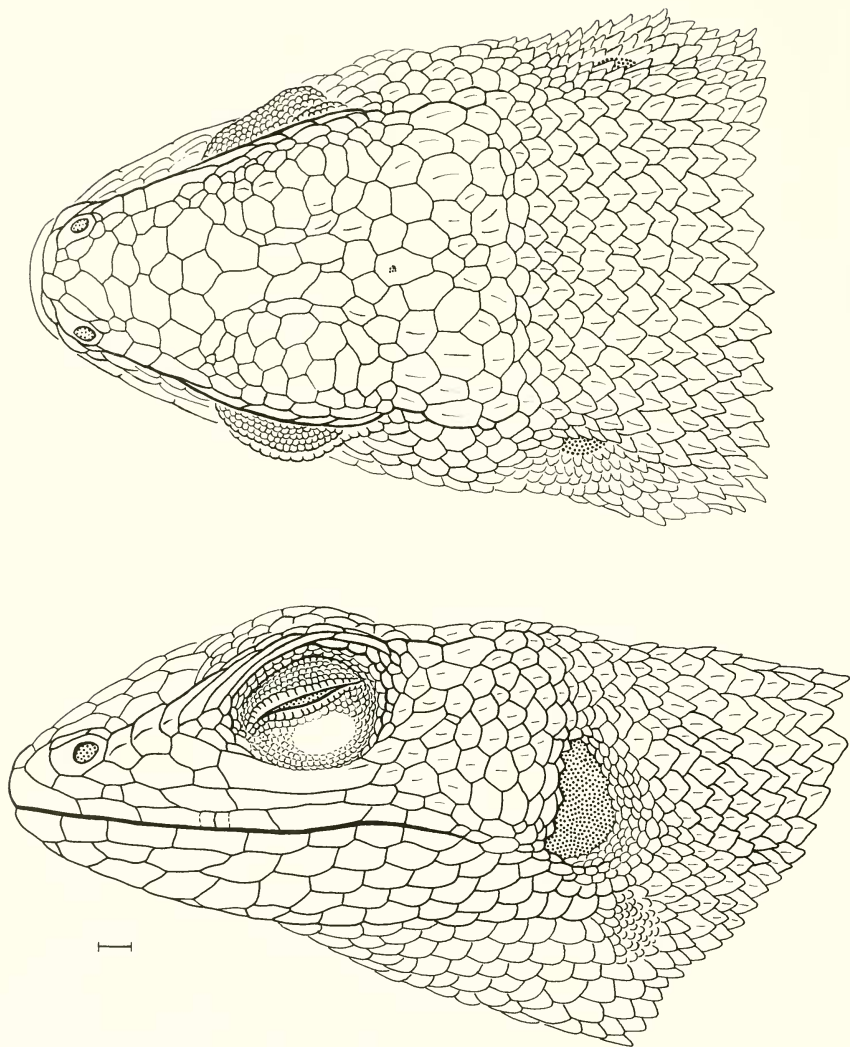


Figure 7. *Stenocercus latebrosus* (paratype, MCZ 154240). Dorsal and lateral views of head scales. Bar = 1 mm.

eye distinct. (9) Antehumeral and oblique neck folds very strongly developed, although this may not be superficially evident because of the heavy covering of large, strongly keeled, mucronate scales on the side of the neck. Other neck folds not distinct. Deep mite pockets present under the antehumeral and oblique neck folds, the oblique neck pocket much larger than the antehumeral pocket. (10) Dorsal scales imbricate, mucronate, and strongly keeled. (11) Vertebral row continuous, not differentiated from paradorsal rows and not bearing a projecting crest. (12) No posthumeral or postfemoral pockets (Type 1). (13) Scales of posterior thigh granular. (14) Tail slightly compressed. (15) Dorsal coloration similar in males and females: brown with paired middorsal series of dark brown triangles or diamonds; dorsolateral light brown stripes distinct in females, less so in males. Gular region of males whitish with black reticulations, which may be so extensive as to make the throat appear black with large whitish spots. Gular region of females white with scattered black spots.

Diagnosis. The presence of deep mite pockets underneath the antehumeral neck folds and the oblique neck folds (Fig. 12) distinguishes *Stenocercus latebrosus* from all other species of *Stenocercus* except *S. ornatissimus*. Although mite pockets underneath neck folds are present in many species of *Tropidurus* (Rodrigues, 1987; Frost, 1992), they are otherwise rare among iguanians. Cadle (1991) found shallow mite pockets under the antehumeral folds in some individuals of *Stenocercus eunetopsis*, *S. simonsii*, *S. carrioni*, *S. cupreus*, and *S. chrysopygus*. The mite pockets in these species are present only in some adults and are little more than bare skin with a slight overhang of the antehumeral folds (with the exception of some populations of *S. chrysopygus*, in which they are more extensive; see footnote 7). The deep mite pockets underneath the antehumeral and oblique neck folds in *Stenocercus latebrosus* are consistently present

in all individuals, even hatchlings and small juveniles. The neck mite pockets of *S. latebrosus* are so distinct that the first specimens I collected, all small juveniles, were immediately tentatively recognized as a new species based solely on the presence of these pockets, which were densely packed with bright red mites. In degree of development and consistency of presence, the neck mite pockets of *S. latebrosus* are approached only in *S. ornatissimus* (see following detailed comparison of these two species).

Aside from *Stenocercus ornatissimus*, *S. latebrosus* is most easily confused with *S. chrysopygus*. *Stenocercus latebrosus* averages fewer scales around midbody than *S. chrysopygus* (44 vs. 52, respectively; Table 1), and *latebrosus* lacks a postfemoral mite pocket (Type 1), whereas at least topotypic *chrysopygus* have a postfemoral pocket of Type 2 or 3. Some *chrysopygus* have weakly to strongly developed pockets under the antehumeral folds, but not under other neck folds, in particular the oblique fold, which in *latebrosus* conceals a very deep mite pocket.⁷ Adult males of *chrysopygus*

⁷The variation in both qualitative (posthumeral and postfemoral pockets, neck pockets) and quantitative (scale counts; Table 1) characters in *chrysopygus* makes precise diagnosis difficult. Specimens from some populations that I tentatively refer to *chrysopygus* lack postfemoral pockets entirely, whereas in others, the pocket consists of a bare skin patch occasionally with a slight overhanging fold. These pockets are always poorly developed in topotypic *chrysopygus*. Similarly, the extent of development of the neck mite pockets varies considerably. For example, topotypic *chrysopygus* generally have a weakly developed pocket under the antehumeral fold, whereas specimens from near Pariacoto and Marca (Ancash department; BMNH, MVZ, and LSUMNS specimens) have very deep pockets under the antehumeral fold equal to, or greater than, its development in *ornatissimus* or *latebrosus*. Color patterns and meristic differences also vary greatly among populations referred to *chrysopygus*, as also noted by Fritts (1974). In general, the extensive variation among populations assigned to *chrysopygus* suggests to me that more than one species may be represented (Table 1), but the variation has not yet been studied systematically. Some of these "*chrysopygus*" populations may not be diagnosable from *ornatissimus*. These problematic

lack the bold black reticulations or large white spots on a black ground color characteristic of *latebrosus* (see *Coloration and Pattern in Life*).

Description. Head. Dorsal head scales small, juxtaposed, and usually strongly keeled, except for some supraoculars and scales on top of the snout (Fig. 7). Extent of keeling varies, but not consistently according to sex or size (see *Sexual Dimorphism and Geographic Variation*). At least the posterior head scales and some supraoculars are keeled in all specimens; supraoculars multicarinated in some specimens; keeling sometimes more extensive in juveniles. Parietal region with many small, irregular scales. Rostral in contact with first supralabial, first lorilabials, postrostrals, and occasionally the nasals. Medial postrostrals much longer than wide, in contact with rostral, internasals, and first lorilabials. Two canthals anterior to the superciliary series, the anterior ones in contact with the nasals or separated from them by tiny scales. Four or 5 elongate superciliaries overlapping posteriorly, followed by 2 shorter posterior superciliaries overlapping in the reverse direction. Internasals 3 or 4 (rarely 2). No distinctly enlarged supraoculars. Parietal, postparietals, and occipitals indistinct; posterior head scales small, fragmented. Interparietal distinguished by a distinct parietal eye visible in all specimens. Temporal scales strongly keeled, imbricate. Gulars smooth. Mental in contact with first pair of postmentals and first pair of infralabials. Enlarged postmentals 3 or 4 on each side.

Neck and Body. Dorsal scales of neck, body, and tail imbricate, mucronate, and strongly keeled down to ventrolateral junction with ventral scales. Vertebral row not, or only slightly, differentiated from adjacent rows; perhaps slightly more prominent from populations south of the Río Chicama. No projecting vertebral or dorsolateral crests. Preauricular fringe mod-

erately developed, consisting of 3–5 scales; posterior border of ear smooth. Ventral scales of gular region and body smooth, smaller and less mucronate than dorsals.

Neck Folds. Lateral scales of neck large, mucronate, strongly keeled, concealing deep mite pockets underneath the antehumeral and oblique neck folds (Fig. 12); deep portions of mite pockets without scales, with fine granular scales peripherally. Antehumeral and oblique neck folds strongly developed, but may be concealed by the large mucronate scales of the neck. Other neck folds not evident. The scales covering the exterior of the oblique pocket posteriorly overlap those covering the antehumeral pocket (Fig. 12), thus obscuring the opening to the oblique pocket. The mite pockets underneath the neck folds are described in detail later (see *Discussion: Comparison of Stenocercus latebrosus and Stenocercus ornatissimus*).

Tail. Dorsal and ventral scales of tail strongly keeled and mucronate, except for a few postanal scales. Tail slightly compressed.

Limbs. Dorsal and ventral scales of forelimbs strongly keeled, mucronate. Dorsal scales of hindlimbs strongly keeled, mucronate; ventral scales smooth. Scales on posterior surfaces of thighs finely granular. Supradigitals of forelimbs smooth, of hindlimbs mostly keeled. Subdigitals multicarinate. Plantar and palmar scales strongly keeled.

Posthumeral and Postfemoral Mite Pockets. Posthumeral and postfemoral mite pockets absent (Type 1). Scales in axillary and postfemoral regions finely granular.

Size and Proportions. Largest male (MUSM-JEC 13836) SVL 76 mm. Largest female (MCZ 178040) SVL 67 mm. Tail 63–70% of total length.

Coloration and Pattern in Life. Adult Males. (Figs. 6, 8, 9), based on specimens from the type locality) dorsal ground color rich brown (somewhat chestnut) with a series of dark brown blotches middorsally. These blotches sometimes take the form

populations are in western Ancash and eastern Huánuco departments, as discussed later.



Figure 8. Adult male of *Stenocercus latebrosus* in life (MUSM-JEC 13026 from the type locality). Note the characteristic labial markings, and that the oblique neck fold and mite pocket are obscured by large, overlying imbricate scales.

of a paired series of dark brown triangles on either side of middorsal line, separated by a fine yellowish brown line. Sometimes they are irregular markings or alternate from side to side. Each blotch has a light brown border about $\frac{1}{2}$ scale wide. The size and number of the dorsal blotches vary, but the usual number between the limbs is 4 to 6. Top of head blackish brown with irregular lighter brown markings. Dorsal pattern continues onto tail, giving it an appearance of being somewhat banded or having dorsal triangular blotches. Top of limbs brown, indistinctly barred. Superciliaries tannish. Whitish bar between eye and supralabials. Supra- and infralabials blackish brown, which is emphasized by adjacent white bars (Fig. 8). Throat and ventral neck white with blackish brown longitudinal and diagonal streaking. Flanks dirty whitish, lighter than dorsum. Pectoral region, venter, ventral surfaces of hind limbs (especially thighs), and base of tail washed with brilliant yellow and occasional bluish streaks. Remainder of ventral surface of tail indistinctly barred with dirty white bands (1 scale wide) alternating with gray bands (about 2 scales wide). In some males, the brilliant yellow wash covers much of the head, especially the loreal/subocular bar, superciliaries, mental re-

gion, and auricular region (sometimes also the top of head).

Males from near Sinsicap (La Libertad department) are similar to those from the type locality, except the black throat markings are so extensive that they anastomose to give the appearance of a black throat with large white spots (Fig. 9). Males from this population, and occasional male topotypes, had bright sky-blue flecks dorsally on the neck and anterior body. These flecks were occasionally arrayed in paired dorsolateral series (e.g., MUSM-JEC 13836, MCZ 182240).

The single male from San Pablo is similar to the Cachil specimens in throat pattern, so it appears that populations on the Pacific versant north of the Río Chicama have bold, nonanastomosing reticulations on the throat, whereas those from south of the Río Chicama have anastomosing reticulations enclosing white spots. The single available specimen from the Amazonian versant (MCZ 154240) is similar to the southern populations in throat pattern.

Adult Females in Life (based on specimens from the type locality). Pattern similar to males with some exceptions: (1) Females lack the yellow wash on the venter and head; (2) Females tend to have, in addition to the dorsal dark blotches, dorso-

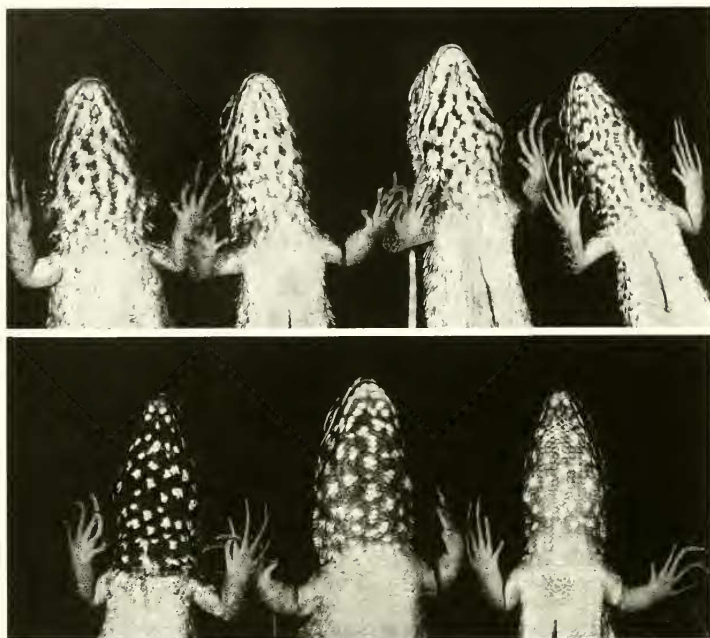


Figure 9. Variation in throat patterns of adult males of *Stenocercus latebrosus* from two localities. Top panel, four specimens from the type locality, Bosque de Cachil (left to right, MCZ 182240, 182238, MUSM-JEC 13014, MCZ 182241). Bottom panel, three specimens from the vicinity of Sinsicap (left to right, MCZ 182242, MUSM-JEC 13836, MCZ 182243).

lateral light stripes that begin above the ear (or slightly anterior), and fade on the base of the tail; these stripes are grayish white to yellowish brown and are widest at midbody; (3) Some females have a slightly orangish wash at the lower edge of the flanks/extreme lateral edge of the belly (in

MCZ 182239, most of belly and ventral side of tail had this wash); (4) Dark markings on throat are less bold in females than in males (Fig. 10). Females with the orange wash on the flanks and belly were gravid and the coloration may be correlated with this condition.

Subadults in Life (based on MCZ 178048-49, MUSM-JEC 10323; SVLs 36-43 mm). Dorsal ground color brown with series of dark brown chevrons that are incomplete middorsally (appearing as a paired series of irregular dorsolateral spots). Light dorsolateral stripe grayish tan. Dorsal surfaces of head and limbs brown with few dark flecks. Flanks brown, heavily speckled with darker brown and lighter (grayish) flecks. Gular, throat, and



Figure 10. Variation in throat patterns of adult females of *Stenocercus latebrosus* (left to right, MCZ 182236-237, 182244).



Figure 11. Hemipenis of *Stenocercus latebrosus* (MCZ 182242) in "lateral" (left) and sulcate (right) views. Proximal end is toward the bottom, distal toward the top. In the lateral view the sulcate surface is to the left, asulcate to the right. Details of structure visible include the "girdle" on the asulcate surface, the fine flounces at the base of the lobes on the sulcate surface, and the sulcus spermaticus.

pectoral regions whitish with irregular dark gray lines and spots; these are most distinct in the smallest individual, less so in the medium sized specimen, and least so in the largest. Ventral belly, tail, and limbs dull whitish with indistinct darker flecks in MUSM-JEC 10323, unmarked in the others.

Hatchlings in Life (from the type locality; SVLs 28–33 mm). Pattern similar to females, but hatchlings tend to be grayish brown dorsally, rather than brown (top of head and neck medium brown, unmarked). Dorsolateral stripes whitish. Throat markings indistinct.

Coloration in Preservative. Grayish brown to brown with dark brown or black markings. Bright colors (yellow and orange) are lost, but the bluish flecks on dorsal neck scales of some males are manifested by light bluish-gray scales.

Scale Counts and Qualitative Characters (Table 1). *Stenocercus latebrosus* has relatively low scale counts and a relatively long tail and lacks any trace of posthumeral or postfemoral mite pockets.

Hemipenis (Fig. 11). Two everted hemipenes of *Stenocercus latebrosus* were ex-

amined, one from a topotype (Cachil) and the other from a paratype from above Sinsicap (MUSM-JEC 13014 and MCZ 182242, respectively). Both everted organs were identical in essential details. The hemipenes of MCZ 154240, the only specimen from the Amazonian versant, are partially everted to the base of the lobes. All observable characters for this specimen are identical to those of the everted organs.

The hemipenis is approximately one-third bilobed and the sulcus spermaticus divides at the separation of the lobes. The basal undivided portion of the organ bears a thickened, rugose band of tissue (girdle) across the proximal portion of the asulcate surface (Fig. 11). Under high magnification this girdle seems to have thick papillae and ridges. Otherwise the undivided portion of the hemipenis is essentially nude, but there are a few fine folds of tissue adjacent to the sulcus spermaticus.

Each lobe is bulbous at its base, tapering to a pointed tip that is deflected back toward the sulcate side (Fig. 11). On either side of the sulcus spermaticus at its point of division (i.e., at the base of each lobe adjacent to the sulcus) is a series of flounces (horizontal, partially overlapping ridges); occasional connecting ridges between the flounces give the appearance of incipient calyces. Toward the asulcate side, the flounces dissipate abruptly, but a series of about three rows remains immediately below the crotch on the asulcate side. The flounces are much more prominent and regular in the Sinsicap specimen than in the Cachil specimen. Passing distally on the sulcate side, the flounces continue adjacent to the sulcus spermaticus for a distance of one-third (Cachil specimen) or one-half (Sinsicap specimen) the length of each lobe. They eventually merge imperceptibly into the calyces.

Aside from the thick branches of the sulcus spermaticus and the flounced areas on the sulcate side, the lobes are entirely calyculate and the calyces bear a dense covering of fine, pointed spinules. The spi-

TABLE 2. GEOGRAPHIC VARIATION IN MERISTIC CHARACTERS AMONG POPULATIONS OF *STENOCERCUS LATEBROSUS* NORTH AND SOUTH OF THE RÍO CHICAMA (SEE TEXT FOR SAMPLES INCLUDED IN EACH POPULATION). FOR EACH CHARACTER THE MEAN (\bar{X}), SAMPLE VARIANCE (s^2), SAMPLE SIZE (N), AND RANGE ARE GIVEN, AND THE RESULTS OF A T TEST COMPARING THE POPULATION MEANS (DF, DEGREES OF FREEDOM).

Character	North	South	<i>t</i>	df	
Midbody scales	$\bar{X} = 40.6$ $s^2 = 5.07$ $N = 25$ 38-46	$\bar{X} = 45.6$ $s^2 = 13.86$ $N = 11$ 43-57	7.07	34	$P < 0.001$
Dorsal scales	$\bar{X} = 46.9$ $s^2 = 6.56$ $N = 24$ 43-52	$\bar{X} = 50.5$ $s^2 = 5.48$ $N = 11$ 46-53	3.84	33	$P < 0.001$
Gular scales	$\bar{X} = 20.1$ $s^2 = 1.33$ $N = 25$ 18-22	$\bar{X} = 22.8$ $s^2 = 2.56$ $N = 11$ 21-26	5.73	34	$P < 0.001$

nules do not seem to be calcified, as they did not stain with alizarin red. The calyculate areas of the lobes are not confluent since the crotch of the organ is nude and the calyces do not extend below the lobes.

Sexual Dimorphism and Geographic Variation. Males and females of *Stenocercus latebrosus* are similar in coloration, but the markings of males tend to be more distinct, especially those on the throat (Figs. 9, 10; See *Coloration and Pattern in Life*). Males attain larger sizes than females (Table 1) and are somewhat more robust.

The known localities for *Stenocercus latebrosus* in La Libertad department are separated from the type locality by the broad, dry valley of the Río Chicama. The samples north of the Río Chicama (Bosque de Cachil and San Pablo) differ significantly from those south of the Río Chicama (vicinity of Sinsicap and Otuzco) in the gular pattern of adult males (See *Coloration and Pattern in Life*; Fig. 9) and in the mean number of midbody, dorsal, and gular scales (Table 2) (the single specimen, MCZ 154240, from east of the continental divide, was ignored in these comparisons). Other tabulated meristic counts (finger and toe subdigitals, supraoculars, internals, and canthals) do not differ significantly between the populations.

The extent of keeling of scales on top of

the head varies among populations. In specimens from the type locality, keels are often present on all dorsal head scales, whereas in specimens from the vicinity of Otuzco and Sinsicap (i.e., south of the Río Chicama) keels are usually restricted to posterior head scales and the supraoculars. The keels in some specimens from the last populations also seem less prominent than those in topotypes, in some instances being low, rounded, and perhaps more accurately described as wrinkles. Subadults and females from south of the Río Chicama often have a dark gray or blackish wash on the side of the head and neck between the eye and forelimb, which is bordered dorsally by the light dorsolateral stripe.

Natural History. The type locality (Bosque de Cachil) is the site of a relictual patch of humid forest surrounded by degraded second growth and brushy, chaparral-like terrain (see Cadle and Chuna, 1995, for description). Specimens of *Stenocercus latebrosus* were observed only outside the limits of the humid forest along trails edged with secondary growth and in agricultural land. They were especially common around (and took refuge in) stone fences and rock walls, and in leaf litter along trails. Subadults and hatchlings were found under rocks on the ground. Similar-

ly, near Sinsicap *S. latebrosus* was collected along roads in relatively open degraded forest with eucalyptus and agaves. Field notes of Ray Hilborn and Carl B. Koford (MVZ field note archives) indicate habitats similar to these for the MVZ paratypes, including dry rocky and brushy hillsides mixed with agricultural land and planted eucalyptus. Fritts (1974: 61) reported (as *S. ornatissimus*, but in reality *S. latebrosus* as indicated above) that near Otuzco males "bask on rocks and *Agave*, whereas females frequently are at bases of shrubs and on the ground between rock patches." No other species of *Stenocercus* are known to be sympatric with *S. latebrosus*, but a species of the *Tropidurus occipitalis* group occurs in the vicinity of San Pablo, Cajamarca (personal observations).

On 17, 18 August 1994 both gravid females and hatchlings (SVLs 28–33 mm) were collected at Bosque de Cachil. All were active in full sun and took refuge in rock or debris piles or stone walls. Some individuals escaped by moving rapidly in leaf litter for a short distance and then remaining motionless in the open; these were well-camouflaged against the dry leaf litter. Cachil at this time was extremely dry (soil even under large boulders was dry and dusty). Days were hot but nights were very cool.

Remarks. Bosque de Cachil comprises a forest of approximately 100 ha in upper reaches of the Río Cascas basin, approximately 2,400–2,600 m elevation (Dillon, 1994; Dillon et al., 1995). The forest is dominated by *Podocarpus* and has abundant epiphytic mosses, bromeliads, and orchids. Floral and faunal surveys of this forest are incomplete, but another new species of lizard was described from the site (*Macropholidus ataktolepis* [Teiidae]; Cadle and Chuna, 1995) and several endemic plants are known (Dillon, 1994). Bosque de Cachil represents the southern terminus for many Pacific slope plant species, and the floral community is a mixture of moist forest elements from farther north and east and semiarid elements from far-

ther south on the Pacific slopes (Dillon et al., 1995).

The coloration and meristic differences between the northern and southern samples of *Stenocercus latebrosus* (See *Sexual Dimorphism and Geographic Variation*) suggest that the the Río Chicama may represent a significant influence on differentiation of organisms in this region of the Andes. Unfortunately, far more survey work has been conducted north of the Río Chicama than south of it in the Cordillera Occidental, so that thorough analysis of this hypothesis is not presently possible. However, it is worth noting that the Río Chicama is the southern limit of at least four species of birds of the western Andean slopes (Francke, 1992), and the spur of the Andes delimited on the north by the Río Chicama harbors two endemic species of frogs (*Telmatobius* [Leptodactylidae]; Wiens, 1993).

Discussion: Comparison of *Stenocercus latebrosus* and *Stenocercus ornatissimus*

Most museum specimens of *Stenocercus latebrosus* from previous collectors were identified in their respective collections as *S. ornatissimus*. Aside from a slightly lower average midbody scale count in *latebrosus* compared to *ornatissimus*, the two species are very similar in standard meristic features that distinguish species of *Stenocercus* (Table 1). However, *Stenocercus latebrosus* seems to attain a larger body size and appears to be more robust than *ornatissimus* (15 mm difference in maximum size; Table 1). Although subject to some variation, the posterior head scales of *latebrosus* are smaller and more irregular than those of *ornatissimus* (compare Fig. 7 and Girard [1858: fig. 2]). Both species possess distinct mite pockets underneath the antehumeral and oblique neck folds. Mite pockets on the neck are highly unusual characters in *Stenocercus*. Hereafter these are referred to as the antehumeral mite pocket and the oblique mite pocket, respectively. Hence, I compare these two

TABLE 3. DISTINGUISHING CHARACTERISTICS OF *STENOCERCUS LATEBROSUS*, NEW SPECIES, AND *STENOCERCUS ORNATISSIMUS* GIRARD.

	<i>Stenocercus latebrosus</i> new species	<i>Stenocercus ornatissimus</i> (Girard, 1857)
Scales covering exterior of neck mite pockets	Nearly as large as dorsal neck scales	Less than half size of dorsal neck scales
Granular scales lining neck mite pockets	Not visible on lateral surface of neck; obscured by scales on exterior surface of the neck folds	Visible on lateral surface of neck; not obscured by overlying mucronate neck scales
Size of neck pockets	Oblique pocket large, occupying more than half of area between ear and forelimb	Oblique pocket small, occupying much less than half of area between ear and forelimb
Throat pattern (adult males)	Either (1) bold black streaks or reticulations or (2) thick, anastomosed reticulations enclosing white spots	Small black spots on whitish ground color; occasionally fine reticulations
Ventral pattern on belly posterior to pectoral region and on ventral surfaces of limbs (adult males)	Whitish or dusky, without black spots or reticulations	Small black spots often cover entire venter, including limbs (usually at least some spots on pectoral region and anterior abdomen)
Hemipenis	Thick "girdle" on asulcate surface below the lobes; flounces well developed at base of lobes	Asulcate "girdle" absent; flounces poorly developed

species in greater detail. Their distinguishing characters are summarized in Table 3.

Characters of the Mite Pockets Underneath Neck Folds (Fig. 12). In adult males of *Stenocercus latebrosus* and *S. ornatissimus* the antehumeral and oblique pockets are deep and internally lined with small granular scales (peripherally) and bare skin (deeply). In females the pockets are less extensive and sometimes are completely lined with scales (lacking bare skin). The following comparisons refer primarily to the structure of the pockets in adult males, although differences between the species are evident in females as well.

In *Stenocercus latebrosus* the scales covering the exterior of the oblique pockets are large, keeled, and mucronate. They completely obscure the granular scales underneath and project posteriorly to overlap the scales covering the antehumeral pocket. The covering is so extensive that it may be easy to overlook the fact that deep pockets reside underneath the scale coverings. On the other hand, in *S. ornatissimus* the exterior scales covering the oblique pockets are much smaller and keeled, but only slightly mucronate, not

obscuring the granular scales underneath and not overlapping the scales covering the antehumeral fold (Fig. 12). The openings to the neck mite pockets in *S. ornatissimus* are superficially evident because of the reduced scale covering on the neck folds. The size contrast between the scales covering the neck mite pockets in the two species is evident by comparing these scales with the scales dorsolaterally on the neck; in *S. latebrosus* the largest scales covering the oblique neck pocket are only slightly smaller than the dorsolateral neck scales, whereas in *S. ornatissimus* the largest oblique neck scales are much less than half the size of the dorsolateral neck scales (Fig. 12).^b

^b An exception to this generalization is the male *Stenocercus latebrosus* from the Amazonian versant (MCZ 154240), in which scales covering the oblique neck fold are about half the size of the dorsolateral neck scales. Whether this is representative of eastern populations is not known. The neck pockets in MCZ 154240 do not appear as deep as in other specimens, but it was overinflated upon preservation and the appearance may be an artifact. In all other respects, including the distinctive throat pattern and observable hemipenial characters (see text), MCZ 154240 is

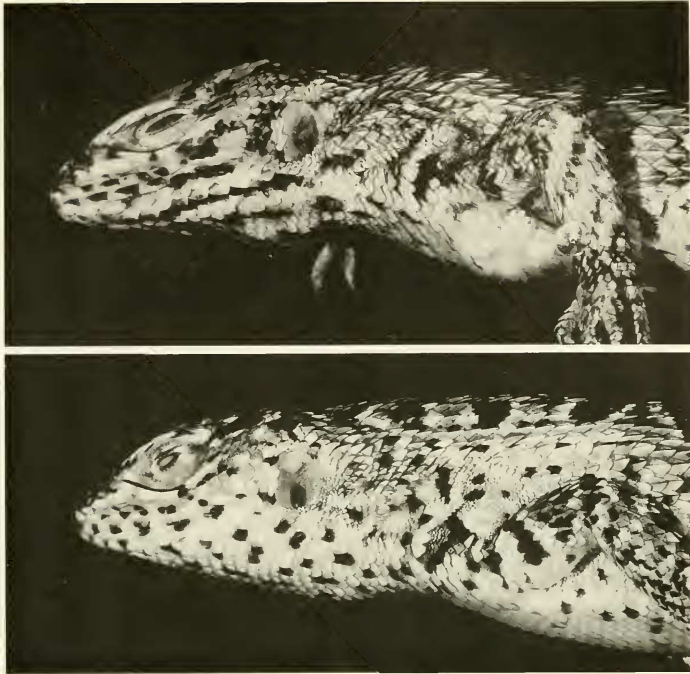


Figure 12. Comparison of scales on the side of the neck in *Stenocercus latebrosus* and *Stenocercus ornatissimus*. In *S. latebrosus* (top; MUSM-JEC 13027) the scales covering the exterior of the oblique neck mite pocket are large and obscure the underlying granular scales lining the edge of the pocket. In *S. ornatissimus* (bottom; MCZ 182154) the scales covering the exterior of the oblique neck mite pocket are smaller and do not obscure the underlying granular scales. A similar contrast is evident in the scales associated with the antehumeral mite pockets. Note also the throat patterns, consisting of dark lines in this specimen of *S. latebrosus* and dots in *S. ornatissimus* (see text and Table 3).

The sizes of the pockets also differ between *Stenocercus latebrosus* and *S. ornatissimus*. In *latebrosus* the oblique pocket is very large, occupying well more than half the space on the lateral surface of the neck between the posterior border of the ear and the insertion of the forelimb. In *ornatissimus* the oblique pocket occupies much less than half of this area. The an-

like other specimens of *latebrosus*. Several females from Sinsicap (e.g., MCZ 182244, MUSM-JEC 13839) also have small scales covering the oblique pocket, but other females from this population are typical in having large scales.

tehumeral pockets are approximately equally developed in *latebrosus* and *ornatissimus*, but the smaller size of the latter gives the impression that the antehumeral pockets of *ornatissimus* are rather larger than those of *latebrosus*.

Ventral Color Pattern of Adult Males (Figs. 9, 24, 25). In adult males of *S. latebrosus* the throat has one of two patterns: bold black streaks or reticulations on a dirty white or dusky ground color or thick anastomosed reticulations enclosing large whitish spots. Dark spots or streaks, when present, are large and cover multiple scales. Black streaks and spots are confined

to the throat and pectoral region (absent from belly and limbs). In *S. ornatissimus* the typical throat pattern consists of small black spots on a whitish ground color. Each black spot usually covers only a single scale, although adjacent scales may be covered or the spots may anastomose to form longitudinal streaks (Fig. 25) or reticulations (e.g., FMNH 41559). In the latter case, the reticulations are always much finer than in *latebrosus*. In *S. ornatissimus* small black spots sometimes cover the entire venter, including the limbs, and there are usually at least scattered black spots on the pectoral region and anterior belly in addition to the throat (Fig. 24). In *S. latebrosus* there are often black longitudinal streaks present on the postmental series of scales, highlighting the whitish or spotted infralabials; these are absent in *S. ornatissimus* (Figs. 8, 12).

Hemipenial Morphology. Detailed comparison of the hemipenes of *Stenocercus latebrosus* (cf. above description and Fig. 11) and *S. ornatissimus* has not been possible because only a partially everted and somewhat damaged organ of *ornatissimus* (as here conceived) has been available (MCZ 182149). However, this hemipenis is different from that of *S. latebrosus* in two distinctive ways (see Fig. 11 and the description of *latebrosus*): (1) it lacks a thick "girdle" on the asulcate surface and (2) it entirely lacks or has only very poorly developed flounces at the base of the lobes; the calyces on the lobes in *ornatissimus* appear to extend to the base of the lobes on the sulcate surface. Like the hemipenis of *S. latebrosus* but unlike that of *S. stignosus*, new species, described next, the calyces of the hemipenis of *S. ornatissimus* appear to be spinulate.

Remarks. The consistent differences between near-topotypic *Stenocercus ornatissimus* and northern populations from La Libertad and Cajamarca departments (Peru) previously assigned to that species (Fritts, 1974) make it virtually certain that distinct species are represented. Moreover, that such disjunct populations rep-

resent a single species (Fig. 1, distributions of *ornatissimus* and *latebrosus*) would be highly unusual for Andean species of *Stenocercus*. Most species of the Andes seem to have rather small ranges, often restricted to single valleys or habitat types (a distribution pattern that contrasts with many lowland species; Cadle, 1991).

Stenocercus stignosus
new species

Figures 13–18; Table 1

Holotype (Fig. 13). **Museo de Historia Natural de San Marcos (MUSM)-JEC 10243. PERU: CAJAMARCA:** [Forest at] El Pargo, 8 km by road (Llama to Huambos) N of La Colmena, then 3–4 km NW by trail, 2,950 m [06°28'S, 79°03'W]. Adult male collected 18 September 1991 by John E. Cadle.

The type locality is in remnants of high montane forests that cover the crest of the continental divide between Llama and Huambos. El Pargo (Pargo on some maps) is a small settlement on the Amazonian versant that consisted (in 1991–1994) of two houses on the main road between Llama and Huambos.

Paratypes. **PERU: CAJAMARCA:** Same data as the holotype, **MCZ 182232–33.** 2–3 km (airline) NW El Pargo (Llama–Huambos road), 3,000–3,100 m [same locality as the type locality, differently stated], **MUSM-JEC 12923–24, 12927, 13000, MCZ 182234–35** (12–15 August 1994, J. E. Cadle, P. Chuna, and S. Leiva). 2 km SE Cutervo, 8,300 ft. [2,530 m; 06°22'S, 78°51'W], **LSUMNS 39477** (19 June 1978, G. R. Graves).

Referred Specimens. **MUSM-JEC 10246–47** (hatchlings), same data as the holotype.

Distribution (Fig. 1). Known only from the highlands of central Cajamarca department, Peru. The dry rain-shadow valley of the Río Chotano separates the two known localities, so the species may be broadly distributed in the region. The forest at the type locality straddles the continental divide, whereas the Cutervo local-

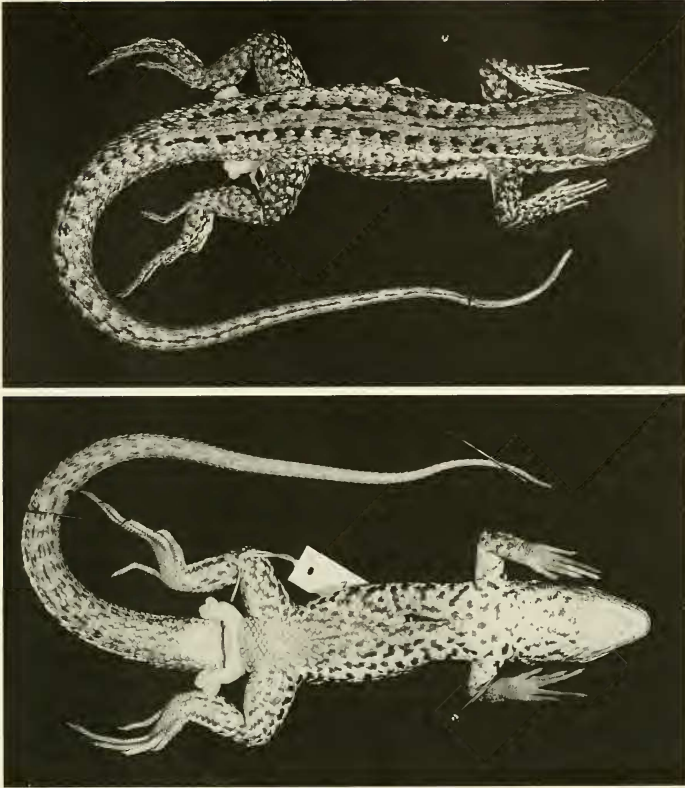


Figure 13. Holotype of *Stenocercus stigmatus* (MUSM-JEC 10243; adult male, SVL 64 mm). Dorsal and ventral views. The ventral spotting of males is diagnostic of the species.

ity is in the upper Marañon (Amazonian) drainage. The known elevational range is approximately 2,500–3,100 m.

Etymology. The specific epithet *stigmatus* is a Latin adjective meaning "full of marks," referring to the strongly patterned venter of adult males (Fig. 13).

Data on the Holotype. Adult male with everted hemipenes, midventral longitudinal slit in abdomen. SVL, 64 mm. Tail length, 132 mm. Total length, 196 mm. Tail as a percentage of total length, 67%. Midbody scales, 52. Gular scales between

the ears, 25. Internasals, 3. Subdigitals on fourth fingers and toes, 18–18, 26–26, respectively.

Definition. A species of *Stenocercus* characterized by the following features (Fig. 14): (1) dorsal head scales smooth, juxtaposed, slightly protuberant. (2) No distinct parietals, postparietals, or occipitals; posterior head scales small; interparietal small, irregular, indicated by visible parietal eye. (3) Internasals usually 4. (4) Several supraoculars in a median row slightly enlarged. (5) Two canthals on ei-

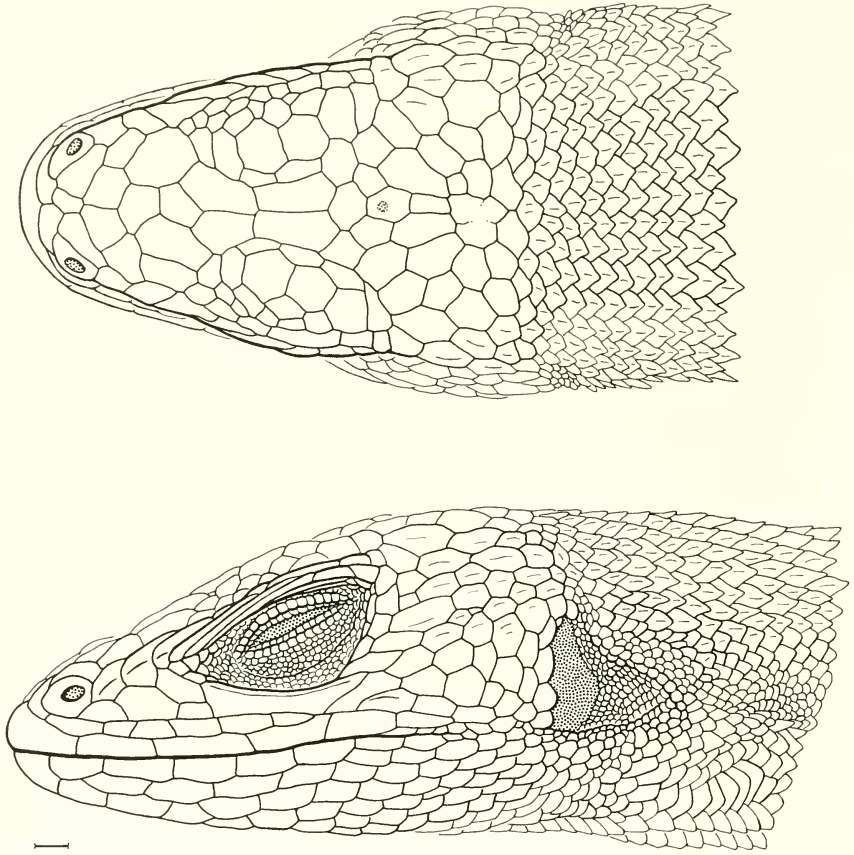


Figure 14. *Stenocercus stigmatosus* (holotype, MUSM-JEC 10243). Dorsal and lateral views of head scales. Bar = 1 mm.

ther side between the superciliaries and the postnasals. (6) No projecting blade-like angulate temporals; scales in dorsal temporal region small and keeled. (7) Gulars and postmental series smooth. (8) Parietal eye distinct. (9) Neck folds weakly developed, consisting of antegular, oblique, longitudinal, and supra-auricular folds (see Cadle, 1991: fig. 1). (10) Dorsal scales imbricate, mucronate, and strongly keeled.

(11) Vertebral row continuous, not strongly differentiated from paradorsal rows, and not bearing a projecting crest. (12) No posthumeral pocket (Type 1); a shallow postfemoral pocket (Type 3). (13) Scales of posterior thigh granular. (14) Tail somewhat compressed, more or less squarish at base. (15) Dorsal ground color of males brown with darker brown or black irregular or triangular markings in dorsolateral

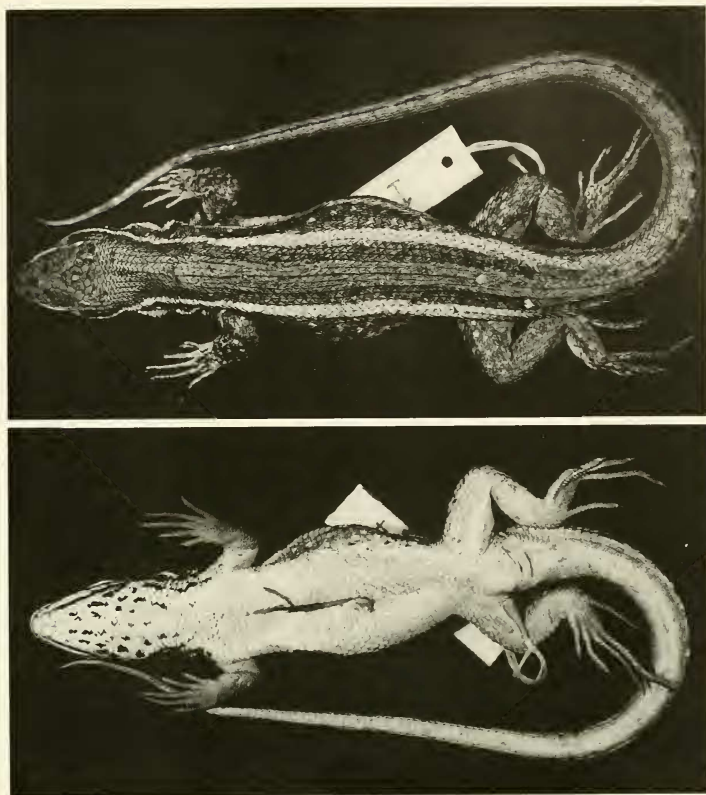


Figure 15. *Stenocercus stigmatus* (MCZ 182232; adult female, SVL 59 mm). Dorsal and ventral views showing pattern (compare Fig. 13).

and lateral series; venter of males, including throat, belly, limbs, and tail, with bold black spots and reticulations (Figs. 13, 16). Females brown dorsally, with light dorso-lateral and lateral stripes; venter with black streaking and spotting on throat, otherwise dirty whitish, unmarked (Fig. 15).

Diagnosis. No other species of *Stenocercus* has bold black spots covering the entire venter, including limbs and tail, in adult males (Fig. 13). However, males in some southern populations referred to *S.*

chrysopygus have black coloration on the ventral pelvic region and base of the tail, occasionally covering more of the venter (Fritts, 1974). *Stenocercus stigmatus* is very similar to *S. chrysopygus* in all meristic and mensural features (Table 1), and it will key to *S. chrysopygus* using Fritts' (1974) key. Fritts (1974) reported geographic variation in coloration and meristic features among populations of *S. chrysopygus*. However, topotypic males of *chrysopygus* (Río Santa valley, Ancash depart-

ment: Caraz, Huaraz, and Recuay; Fig. 1) invariably lack black ventral coloration except for occasional dark reticulations on the gular region (see *Specimens Examined*). In available males of *stigmus* the black spots do not anastomose on the gular region to form reticulations, but maintain their distinctness. Furthermore, those populations of *chrysopygus* in which the venter of males has extensive black pigment are the most southerly populations—those farthest from the known localities for *stigmus* (Fig. 1).

Females of *stigmus* have a pair of light stripes on either side of the body from the eye to the base of the tail (dorsolateral stripe) or inguinal region (lateral stripe). Females of *chrysopygus* have light dorso-lateral stripes but lack lateral stripes. Finally, the antehumeral neck fold in both sexes of *chrysopygus* is more strongly developed than in *stigmus*, and in *chrysopygus* a distinct mite pocket, consisting of a scaleless patch of skin, is often present underneath the antehumeral fold. Such a pocket is lacking in *stigmus*.

Aside from the distinctive male coloration, *Stenocercus stigmus* can be distinguished from other species of *Stenocercus* by the combination of (1) no posthumeral pocket; (2) moderately developed postfemoral pocket (Type 3); (3) smooth dorsal head scales and ventral scales; (4) granular scales posterior to tympanum; (5) relatively low number of midbody scales (49–57; Table 1); (6) neck folds consisting of moderately developed antehumeral, oblique, and supra-auricular folds, but other neck folds absent; (7) no mite pockets underneath neck folds; (8) no projecting vertebral crest; and (9) no strongly spinose scales on the tail.

Stenocercus latebrosus and *S. ornatissimus* are similar to *S. stigmus* in scutellal features (but not coloration), but they lack postfemoral mite pockets and possess mite pockets underneath the antehumeral and oblique neck folds. Other species in northern Peru and Ecuador have other combinations of characters,

such as more midbody scales and/or spinose tails (*boettgeri*, *carrioni*, *chlorostictus*, *crassicaudatus*, *empetrus*, *emnetopsis*, *simonsi*), projecting dorsal crests (*festae*, *formosus*, *guentheri*, *huancabambae*, *humeralis*, *imitator*, *nigromaculatus*, *nubicola*, *ornatus*, *percultus*, *rhodomelas*, *variabilis*), keeled head scales (*ivitus*, *orientalis*), keeled ventrals and large posterior head scales (species of *Ophryoessoides* *sensu* Fritts, 1974), or imbricate post-auricular scales and well-developed gular folds (*cupreus*).

Description. Head. Dorsal head scales small, juxtaposed, smooth, and somewhat protuberant (Fig. 14). Parietal region with many small scales. Rostral large, in contact with first supralabial, first lorilabials, and 2 or 3 postrostrals. Two canthals anterior to the superciliary series, the anterior ones in contact with the nasals. Generally 4 elongate superciliaries overlapping posteriorly, followed by 2 shorter posterior superciliaries overlapping in the reverse direction. Internasals usually 4 (occasionally 3, rarely 2). Three or 4 median supraoculars enlarged. Parietal, postparietals, and occipitals not distinguishable; posterior head scales small, fragmented. Interparietal distinguished by a distinct parietal eye visible in all specimens. Lateral temporal scales juxtaposed, smooth except for the dorsal ones in the series, which are keeled. Gulars smooth. Mental in contact with first pair of postmentals and first pair of infra-labials. Enlarged postmentals 3 or 4 on each side.

Neck and Body. Dorsal scales of neck, body, and tail imbricate, mucronate, and strongly keeled; on body grading abruptly into smooth, imbricate, and less mucronate ventrolateral and ventral scales. Preauricular fringe poorly developed, consisting of 3 or 4 scales. Scales immediately posterior to ear granular, grading into small subimbricate scales on side of neck. Scales in axillary region and immediately dorsal to forelimb insertion granular. Lateral neck scales much smaller than dorsal neck scales; more or less abrupt transition

between dorsal and lateral scales along the supra-auricular fold.

Vertebral crest absent; although the vertebral row may appear slightly more strongly keeled than other dorsal rows, this appears to be due more to the differentially black pigmented keels on this row than to any difference in keel size or projection. Ventral body scales (gulars, venter, limbs) smooth. Ventral scales approximately equal in size to dorsal scales.

Neck Folds. Skin of neck weakly folded. Moderately developed oblique, antehumeral, and longitudinal folds, and weakly developed supra-auricular folds are universally present. Other neck folds lacking.

Tail. Dorsal scales of tail strongly keeled, mucronate, and imbricate. Ventral scales imbricate, smooth at the tail base and weakly keeled distally. Tail slightly compressed.

Limbs. Dorsal and ventral scales of forelimbs moderately keeled. Dorsal scales of hindlimbs strongly keeled, ventral scales smooth. Scales on posterior surfaces of thighs granular. Supradigitals of forelimbs smooth, of hindlimbs keeled. Subdigitals multicarinate. Plantar and palmar scales strongly uncarinate.

Posthumeral and Postfemoral Mite Pockets. Posthumeral and postfemoral mite pockets Types 1 and 3, respectively. Posthumeral scales are granular, pavement-like. Postfemoral pocket located posterodorsally at junction of thigh and body, consisting of a bare or weakly keratinized skin pocket with a thickened border.

Size and Proportions. Largest male (MUSM-JEC 13000), SVL 68 mm. Largest female (MCZ 182233), SVL 61 mm. Tail 64–67% of total length.

Coloration and Pattern in Life. *Adult Males in Life* (Figs. 13, 16, based on the *holotype*). Top of head and dorsum dark medium brown. Thin whitish stripe from posteroventral corner of eye to top of ear, continuing as an interrupted bright yellow dorsolateral stripe to the base of the tail (on the body manifested as a longitudinal series of yellow flecks). Medial to the yellow

stripe, ground color is light brown, which is separated from middorsal brown color by a brownish black wavy border, giving medial edge a scalloped effect. Post-auricular region and flanks brown, heavily flecked with yellow and dark brown. Elongate subocular and 1 or 2 presuboculars dull whitish. Canthals somewhat lighter brown than rest of head color.

All males have some indication, more or less marked in different individuals, of blackish irregular markings dorsolaterally from the neck to the tail base. These form pairs on either side that are well separated on the midline. Often the keels on many or most scales of the vertebral row are black, giving the appearance of a fine middorsal line.

Upper surfaces of limbs dark brown flecked with tan. Mental, postmentals, and anterior gulars dull whitish, some with brownish borders giving appearance of dark line between sublabials and postmentals. Posterior gulars (from the level of the jaw angle) and pectoral region pale yellow irregularly spotted with dark brown. Ventral fore- and hindlimbs similar, but yellow on hind limbs is a deep bright yellow. Belly between pectoral and inguinal regions bright green, irregularly spotted with dark brown. Dorsal tail similar to body but stripes indistinct (giving appearance of brown flecked with yellow and darker brown). Ventral tail dull yellowish at base, then greenish flecked with dark brown for nearly one-half of tail length, then fading to medium light brown, generally unflecked.

Adult Females in Life (Figs. 15, 17, based on MCZ 182232, a *topotype*). Top of head and middorsum medium brown. Pale tan dorsolateral stripe beginning at posteroventral corner of eye, over top of ear, and continuing onto base of tail. This stripe bordered above on body and tail by a somewhat wider reddish brown stripe. Dull white line from angle of jaw to scapular region, passing ventral to ear; here it is briefly interrupted, then continues as a less distinct light (pale tan) stripe to inguinal

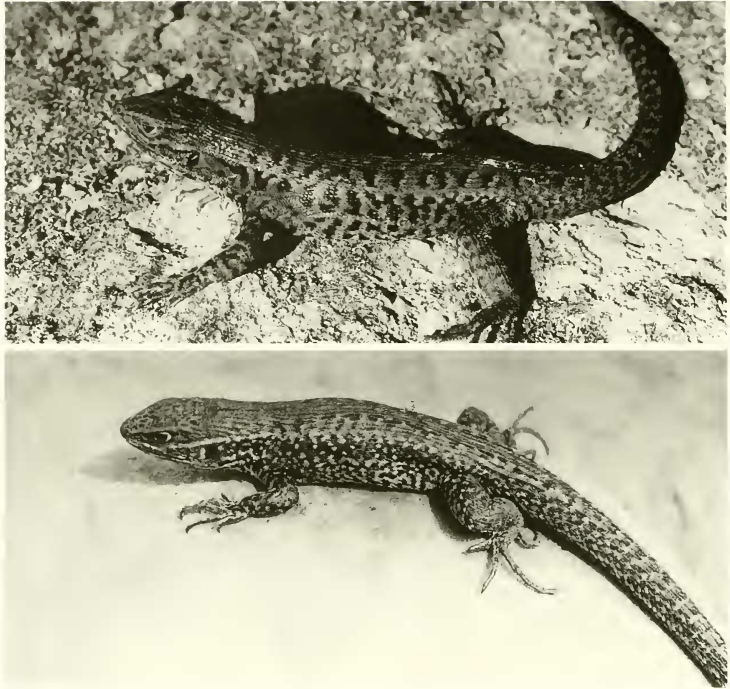


Figure 16. Adult males of *Stenocercus stigmosus* in life from the type locality. *Top*, MCZ 182234. *Bottom*, MUSM-JEC 10243. Note the indistinct dorsolateral and lateral stripes, and the differences in dorsal and flank patterns in the two specimens.

region. On the head and neck this stripe is bordered ventrally by a black stripe. Flanks between lateral and dorsolateral light stripes brown flecked sparsely with pale tan. Scapular, suprascapular, and posthumeral region with yellow wash. Dorsal surface of limbs brown with a few lighter flecks. Flanks below lateral light stripe brown with lighter flecks and entire area with yellow wash. Throat and gular region dull white with dark brown small spots. Dark brown line between postmentals and sublabials widens to form broad dark brown area on side of neck to the base of the forelimb. Ventral surfaces of belly, limbs, and tail more or less homo-

geneous grayish tan/brown without markings.

Most females are very similar to that just described. The dorsolateral and ventrolateral stripes are constant features. Several adult females (e.g., MCZ 182233) had a very light rosy or coppery sheen on the belly and a yellow wash on the ventral surfaces of the hindlimbs. One female (MUSM-JEC 12923) had a bright rusty red color from the posteroventral corner of the eye to just behind the ear and extending below the ventrolateral stripe on the neck and anteriorly along the infralabials. This peculiar female coloration is indicative of a gravid condition in some oth-



Figure 17. Adult female of *Stenocercus stigmus* in life from the type locality (MCZ 182232). Note the distinct dorsolateral and lateral stripes characteristic of females.

er tropidurids and in some phrynosomatid lizards, but not in this particular case: MUSM-JEC 12923 is a subadult female (SVL 48 mm).

Coloration in Preservative. All of the brilliant colors (yellows, greens, etc.) of the dorsum and venter are lost in preservative. Dark brown appears blackish in preservative. Preserved lizards are basically brown

dorsally and dirty whitish ventrally, with bold black markings dorsally and ventrally.

Scale Counts and Qualitative Characters (Table 1). The scale counts are moderately high, indicating the smaller scales of this species compared, for example, with *Stenocercus latebrosus*.

Hemipenis (Fig. 18). An everted hemipenis of *Stenocercus stigmus* from the type locality was examined (MUSM-JEC 12924). The organ is about one-third bilobed. The sulcus spermaticus divides at the separation of the lobes. Each branch passes a short distance along the crotch side of the lobe (centripetally), then passes to the outer side of the lobe and appears to end just short of the tip of the lobe. The lobes are broad at the base and taper to points. The tips of the lobes of this specimen are slightly uneverted and would probably have a form similar to that of *S. latebrosus* (Fig. 11) if completely everted.

The base of each lobe on the sulcate side is ornamented with broad, overlapping flounces. These pass to the asulcate side just proximal to the lobes, where about 5 to 6 flounces encircle the organ. Adjacent flounces are occasionally connected by ridges of tissue, forming incipient calyces. Distally on each lobe the flounces are rather abruptly transformed



Figure 18. Hemipenis of *Stenocercus stigmus* (MUSM-JEC 12924) in "lateral" view. Sulcate surface is to the left, asulcate to the right; proximal toward the bottom. The tips of the lobes are slightly uneverted, and would probably have much the same form as the hemipenis of *S. latebrosus* (Fig. 11). The broad, thick flounces at the base of the lobes on the sulcate surface are visible (compare *S. latebrosus*, Fig. 11), as are the calyces covering the lobes.

into calyces by augmentation and accentuation of these connecting ridges. Both the flounces and the walls of the calyces on the hemipenis of *Stenocercus stigmiosus* are much thicker than those of *S. latebrosus* and the calyces in *stigmiosus* lack surmounting spinules. The crotch of the organ is nude and the calyculate areas are well separated. However, the flounces form a prominent and continuous band around the hemipenis below the lobes. The basal undivided portion of the organ has several irregularly placed transverse folds that are similar to the flounces, except that they are formed of much thinner tissue and are not broad like the well-developed distal flounces.

Sexual Dimorphism and Geographic Variation. Males attain a slightly larger size than females (Table 1) and differ in coloration and pattern (see above). Females have quite distinct dorsolateral and lateral light stripes, whereas in males usually only the dorsolateral stripe is distinct. The sexes do not differ significantly in standard scale counts. The male from near Cutervo (LSUMNS 39477) has fewer subdigital scales on the fourth finger than the topotypes (14 vs. 17–19), but otherwise does not differ in substantive ways from them. This seems rather remarkable in view of the the considerable physiographic fragmentation in this portion of the Andes and the separation of the two localities by the broad dry valley of the Río Chotano.

Natural History. The type locality for *Stenocercus stigmiosus*, the forest at El Pargo, was the site of a transect sample for plant diversity by the late Alwyn H. Gentry, who classified the forest as "humid montane forest" according to the Holdridge (1967) system and estimated the precipitation at 1,200 mm annually (Gentry 1992, 1995). I visited the site in September 1991 (with Gentry) and in August 1994. The following comments are taken primarily from my field notes of 8 September 1991. The forest, located at the crest of the ridge on the continental divide along the road between Llama and Huam-

bos, is a high montane cloud forest dominated by *Weinmannia* and *Oreopanax* (Figs. 19, 20). El Pargo itself is a couple of dwellings on the main road at 2,790 m. From there a trail ascends to the forest, which begins at about 2,900 m and locally extends to just over 3,000 m. Between the road and the forest the trail crosses a large area of chaparral-like vegetation with grayish white, claylike soil; this area is heavily disturbed by cattle grazing and frequent burns. Apparently, the area has very few natural streams, but there is an extensive array of irrigation ditches constructed by locals. The forest itself has a very dense understory and the trees are festooned with epiphytes (bromeliads, orchids, mosses, etc.).

The forest at El Pargo is presently a rather small isolated patch but may once have been much more extensive, as suggested by large areas adjacent to the present forest with felled logs and standing trunks (Fig. 21). Additional forest remnants that were probably continuous with it were still present in 1994 at higher elevations on the ridge forming the western edge of the Río Chotano valley, which is accessible via a road passing north to Querocoto and Querocotillo. However, these forests are probably doomed. Many patches had been cut from the forest at El Pargo in 1991, and these were in various stages of second growth or were converted to cattle pasture (Fig. 21). In 1994 additional portions had been cut, and there was active felling of trees using chain saws. Likewise, most of the forest near the road in the Río Chotano valley is heavily disturbed and subject to continued destruction.

On 18 September 1991 at El Pargo, I collected two hatchlings (MUSM-JEC 10246–47; SVLs 28 and 24 mm, respectively), two adult females, and one adult male *Stenocercus stigmiosus* from brush piles in and around a recently cleared field surrounded by forest. The adult females (MCZ 182232–33) contained enlarged shelled eggs. The lizards took refuge in



Figure 19. Forest at the type locality of *Stenocercus stigmosus*. *Top* (photographed 12–15 August 1994), overview of the continental divide showing dense forest blanketing the slopes. Slopes to the right are east of the continental divide (Amazonian drainage), whereas those in the background are west of the divide (Pacific drainage). The crest of the divide is somewhat over 3,000 m elevation. *Bottom* (photographed 8 September 1991), closer view of the forest. The dense clouds in the background were characteristic during visits to El Pargo in August and September.



Figure 20. A trail through the forest at El Pargo (photographed 8 September 1991). The dense shrubs in the foreground are a product of the light gap created by the trail but the dense trees are characteristic of this forest (see also Figs. 19, 21).

brush piles and undergrowth. The day was cloudy and cool, and no active lizards were seen.

On 13–15 August 1994, 0900–1300 hr at the same locality, I collected a series from trail edges, mostly in secondary growth under piles of debris (decaying logs, etc.). The lizards were more evident in 1994 than in 1991, probably due to the warm sunny days in 1994 versus cloudy and cool days in 1991. As in 1991, *Stenocercus stigmus* was mostly terrestrial (heard more often than seen, skittering through leaf litter at trailside) but was occasionally observed on or in stone fences in the area. Retreat sites at night or after being disturbed when active were underneath logs or piles of debris. The only other natural history data for *Stenocercus stigmus* are on the specimen tag for LSUMNS 39477, indicating that the specimen was collected in “dense grass and shrubs on a mountain slope.”

Stenocercus stigmus is not known to be sympatric with other species of *Steno-*

cercus, although both *S. eunetopsis* and *S. crassicaudatus* are known from slightly lower elevations (<2,700 m) near the type locality (personal observations). The only other lizard known from the type locality is *Proctoporus ventrimaculatus* (Teiidae).

DESCRIPTIVE NOTES AND COMMENTS ON *STENOCERCUS ORNATISSIMUS* (GIRARD)

Girard (1857, 1858) described *Saccolaima ornatissima* on the basis of specimens from “Obrajillo and Yanga, Peru” obtained by the U.S. Exploring Expedition. Richard Etheridge (in Peters and Donoso-Barros, 1970) first associated the species with *Stenocercus*. The U.S. Exploring Expedition used Callao (Lima) as a base from June–November 1839 (Jackson, 1985), and the types of *S. ornatissimus* were collected during that time.

Stenocercus ornatissimus has remained poorly known since its description, and I have no field experience with it. As reported above, Fritts’ (1974) discussion of



Figure 21. Forest destruction at El Pargo (both photographed 8 September 1991). Top, a recently cut and burned patch of forest destined for agricultural use. Bottom, the older cut area immediately peripheral to the existing forest, which is visible in the right background. Note the numerous felled and standing logs, which indicate that the original extent of the forest was much greater. From right to left the people are botanists Roza Ortiz, Camilo Díaz, Alwyn H. Gentry, and two local inhabitants.

ornatissimus relied primarily on a series of *S. latebrosus* from near Otuzco in northwestern Peru (La Libertad department). My review of *ornatissimus* was largely in the context of diagnosing *latebrosus*. I consider *ornatissimus* to be restricted, as pres-

ently known, to Lima department, Peru (Fig. 1); although, as indicated in footnote 7 and the discussion below, the relationship to *ornatissimus* of certain populations currently referred to *Stenocercus chryso-pygus* bears further scrutiny. The obser-

vations reported here are based on study of the existing type and specimens from near the type locality (see *Specimens Examined*). Scutellational data on these samples are reported in Table 1.

Type Material and Designation of Lectotype. The type series of *Stenocercus ornatissimus* consisted of a male from "the Lower Cordilleras, just below Obrajillo" [$11^{\circ}23'W$, $76^{\circ}41'W$; Canta province, Lima department, 2,764 m elevation; Stiglich, 1922] and a female from "Yanga" [=Yangas, Canta province, Lima department, 3,106 m elevation].⁹ The type localities are two nearby villages in mountains northeast of the city of Lima. The male specimen has not been located (apparently not at USNM or ANSP). The female is now USNM 5655 and it is hereby designated the lectotype (Fig. 22).

USNM 5655 is in fair condition and has the belly opened and the distal portion of the tail missing. The specimen is adult, evidenced by a large shelled egg in the body cavity (an additional egg was originally present, as indicated by a large vacuity in the abdomen). Originally described in brief format (Girard, 1857), *S. ornatissimus* was given a more extended description a year later (Girard, 1858). Additional details for USNM 5655 not provided by Girard are as follows: SVL 54 mm, proximal unbroken portion of tail 17 mm, 49 scales around midbody, 2 canthals, 4 internasals, 19-18 subdigitals on the fourth fingers, 28[?]-29 subdigitals on the fourth toes. Few details of the pattern remain on USNM 5655, but Girard (1858) described the coloration of the male syntype in detail

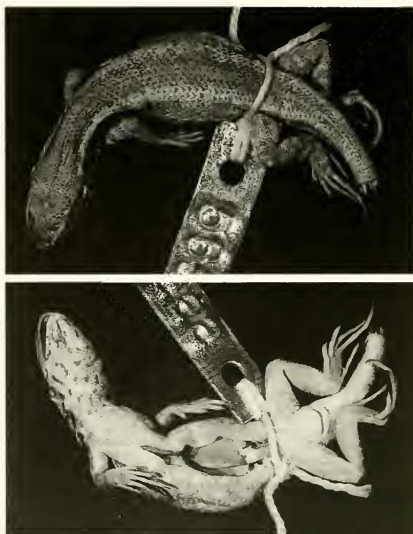


Figure 22. Lectotype of *Stenocercus ornatissimus* (Girard) in dorsal and ventral views. (USNM 5655; female, SVL 54 mm).

and gave more cursory notes on the female.

Diagnosis and Descriptive Comments. Because Girard's (1857, 1858) descriptions are excellent, I provide only a summary diagnosis of *Stenocercus ornatissimus* to distinguish it from species subsequently described. The most distinctive feature of *S. ornatissimus*, a pair of mite pockets on each side underneath the antehumeral and oblique neck folds, formed the basis of Girard's generic name *Saccodeira* (from Greek *sakkos* = bag or pocket, and *deira* = neck). This character distinguishes *S. ornatissimus* from all species of *Stenocercus* except *S. latebrosus* described herein; characters distinguishing these two species and details on the mite pockets of *ornatissimus* are given in the discussion of *latebrosus* (see Fig. 12; Table 3). Although a few other species of *Stenocercus* occasionally have mite pockets underneath the antehumeral folds (Cadle 1991: 82), they are not as fully or consistently developed as in

⁹ This "Yangas" is in Arahuay district according to Stiglich (1922), who gave the elevation reported here; it is not on the maps or in the gazetteers consulted. The town of Arahuay (and thus Yangas, approximately) is at $11^{\circ}37'S$, $76^{\circ}40'W$. This locality should not be confused with the large town of Yangas on the Río Chillón northeast of Lima ($11^{\circ}41'S$, $76^{\circ}41'W$), which is indicated on most maps; it is well below 1,000 m elevation. My determination of Girard's "Yanga" is based on the elevation, its nearness to Obrajillo, the other type locality, and other definite localities for this species, all of which are above 2,000 m elevation.

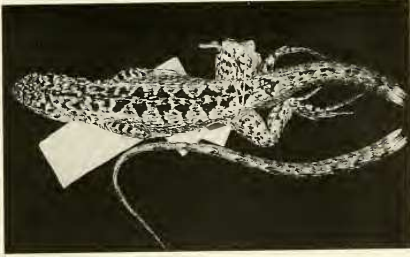


Figure 23. Characteristic dorsal pattern of *Stenocercus ornatissimus* (MCZ 182154, adult male). All recently collected specimens of both sexes which were examined have paired series of triangular blotches on the dorsum.

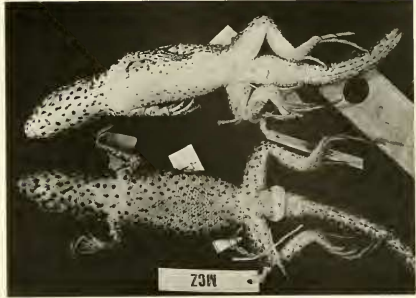


Figure 24. Characteristic ventral pattern in adult males of *Stenocercus ornatissimus* (MCZ 182154 and 182150, top and bottom, respectively). Small spots are invariably present on the throat and anterior pectoral region, as in MCZ 182154. In other specimens the spots are much more extensive, covering the entire venter, limbs, and tail, as in MCZ 182150. In females spots are less distinct and usually restricted to the throat and anterior pectoral region (Fig. 25).

S. ornatissimus and *S. latebrosus*, the single exception being some populations of *Stenocercus chrysopygus* that have deep pockets under the antehumeral fold (see footnote 7 and discussion below). Distinct mite pockets underneath the oblique neck folds are unknown in *Stenocercus* aside from *ornatissimus* and *latebrosus*.

Girard (1857, 1858) described the head scales of *Stenocercus ornatissimus* as sub-tuberculous or moderately multicarinated. In USNM 5655 and most specimens I have examined, the head plates are smooth. Distinct keeling, when present, is mostly restricted to lateral scales in the occipital region. Several specimens have decidedly tuberculate or wrinkled head scales (e.g., MCZ 182149–50, FMNH 41559 [126, 130]), in which case the posterior head scales and supraoculars are most often involved.

Girard's (1858: 325, 326) description of color pattern is accurate for all recent specimens I have examined (Figs. 23–25):

A double series of blackish-brown, light-margined, subtriangular spots may be observed along the back, with their bases parallel to the dorsal line These spots or bands may be traced along the upper surface of the tail to its tip The chin, throat, and a portion of the chest are whitish, over which are interspersed small jet-black spots, of various shapes.

The extent of spotting on the venter in

males varies (Figs. 24, 25). Small spots are universally present on the throat and pectoral region but may also occur over most of the venter, including limbs and tail (Fig. 24). In most specimens the throat spots are discrete and slightly irregular, but in other specimens adjacent spots fuse to form longitudinal streaks (Fig. 25). In some specimens (FMNH 41559) the streaks anastomose to form reticulations. Females have reduced spotting on the venter compared to males (Fig. 25). In females, the spots are nearly always restricted to the throat and are less prominent than in males.

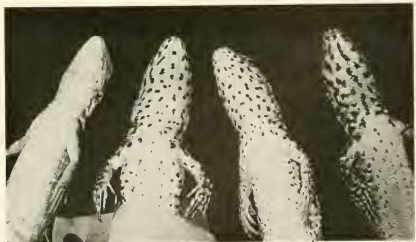


Figure 25. Variation in throat patterns of adult *Stenocercus ornatissimus*. Far left, MCZ 182152, adult female. All others are adult males, left to right, MCZ 182153, 182154, 182149.

Distribution (Fig. 1). *Stenocercus ornatissimus* as here conceived is known from elevations of approximately 2,000–3,400 m on the Pacific Andean slopes of Lima department (approximately 11°20'–12°S latitude).

STATUS OF *STENOCERCUS* POPULATIONS OF WESTERN ANCASH DEPARTMENT (PERU) AND THE PROBLEM OF VARIATION IN *STENOCERCUS CHRYSOPYGUS*

As pointed out in the discussion of *Stenocercus latebrosus* (footnote 7), the systematic status of some populations in western Ancash department, Peru, is in doubt. Their relationship to *S. chrysopygus*, *S. latebrosus*, and *S. ornatissimus* needs additional study. Verified literature references and specimens identified as *S. ornatissimus* from northern Peru (Ancash and La Libertad departments) have usually referred to either *S. latebrosus* or (more questionably) to *S. chrysopygus*. Nevertheless, the identity of samples from near Pariacoto and Marca in western Ancash is difficult to establish, as is the relationship of some other samples referred to *chrysopygus* from the eastern and southern part of its range (see *Specimens Examined*).

The Pariacoto and Marca populations are on the Pacific slope of the Andes and are separated from topotypic populations of *Stenocercus chrysopygus* by very high ranges (>4,000 m) of the Cordillera Negra. A gap of nearly 200 km separates Marca in southwestern Ancash from the nearest population of *S. ornatissimus* in Lima department from which I have examined specimens. The samples from Pariacoto and Marca differ from topotypic *chrysopygus* and *ornatissimus* in several characters. The antehumeral pockets are moderately to well developed in these populations, but they lack mite pockets under the oblique folds; in these respects they are like samples from east of the Cordillera Negra referred to *chrysopygus*. The Pariacoto/Marca specimens are similar to

topotypic *ornatissimus* in having triangular blotches on the dorsum (compared to rectangular or irregular blotches in *chrysopygus*), but they have moderately developed postfemoral pockets (Types 2 and 3), which are absent in topotypic *ornatissimus*. In other respects, such as scale counts and patterns, they are similar to both *chrysopygus* and *ornatissimus*. One interpretation of the Pariacoto/Marca populations is that they represent the northern extension of *S. ornatissimus* on the Pacific versant, which is thus allopatric to *S. chrysopygus*. The differences between them and topotypic *ornatissimus* would then be viewed as geographic variation. On the other hand, a similar interpretation is possible vis-à-vis these populations and *chrysopygus*.

Further confusing the issue is the extensive variation among other populations currently referred to *S. chrysopygus* (footnote 7). Nonetheless, the type localities of *chrysopygus* are from high elevations in the interandean valley of the Río Santa, a major river flowing into the Pacific Ocean (Fig. 1). These populations are isolated from those of the Pacific versant in western Ancash by the aforementioned high range of the Cordillera Negra. Likewise, they are isolated from eastern and southern populations (Huánuco and Ancash departments) by the extensive high ranges of the Cordillera Blanca, the highest mountains in Peru (>5,000 m elevation and with some peaks >6,000 m). It would not be surprising to discover that this rugged terrain harbors more than one species similar to *chrysopygus* or that the isolating effect of the mountains produces extensive variation among populations within a single species.¹⁰ A complex of closely similar species existing in the juncture of Ancash,

¹⁰ The samples of *Stenocercus chrysopygus* studied herein extend its distribution to the east beyond that reported by Fritts (1974). LSUMNS 27243–44 are from the upper Río Huallaga drainage and separated from the next localities to the west by high mountains (>4,000 m) and by the upper Río Marañon valley.

Lima, and Huánuco departments is one possible interpretation consistent with the known variation exhibited by these populations. If this is true, then the limits and distributions of the species are currently confused.

Resolution of the status of the populations of western Ancash, as well as that of all populations of *Stenocercus chrysopygus* will require a more thorough study of geographic variation in *Stenocercus chrysopygus*. However, that may not be possible with existing museum collections. Additional samples from both sides of the Cordillera Negra and Cordillera Blanca will probably be needed. Additionally, field work in southern Ancash department and northern Lima department, especially on the Pacific versant, would provide samples relevant to assessing the relationship of these populations to *ornatissimus* to the south. This region seems to be relatively devoid of existing museum specimens of *Stenocercus*, a deficiency that hampers resolution of the current problem.

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SPECIMENS EXAMINED

Institutional abbreviations are given in the *Materials and Methods*. Locality data from the respective museum catalogs and/or specimen tags are followed by bracketed information (usually elevations or coordinates) inferred from other sources (see *Materials and Methods*).

Stenocercus ornatissimus (Girard)

PERU: LIMA: Marcahuasi (Prov. Huarochiri, Distr. 'San Pedro de Casta') [approximately 11°46'S,

76°35'W], ANSP 31837–38. Matucana [2,378 m; 11°51'S, 76°24'W], FMNH 41559 (9 specimens, identified individually by field numbers). San Pedro de Casta, approximately 3,400 m [11°46'S, 76°35'W], MCZ 18214S–54. Surco, 2,050 m [11°52'S, 76°25'W], BMNH 1901.S.2.57–58. Verrugas [a quebrada whose mouth is at 1,725 m elevation and 11°52'S, 76°29'W fide Lamas, 1976; empties into the Río Rimac], USNM 7539S. Yanga [=Yangas, 3,106 m, approximately 11°37'W, 76°40'W; see footnote 9], USNM 5655 (lectotype).

Stenocercus chrysopygus Boulenger

PERU: Locality uncertain (?ANCASH): "near Chimbote", FMNH 5655–59 [specimens presumably from mountains E of Chimbote, which is a coastal city at sea level]. **ANCASH:** Carolas [coll. by P. O. Simons, whose 'Carolas' probably = Carhuás fide Stephens and Traylor (1983)] [2,625 m; 09°16'S, 77°38'W], MCZ 8073. Huaraz region [approximately 09°32'S, 77°32'W], AMNH 63475–76, MCZ 45833–34, 45836. Huaylas (Prov. Huaylas) [2,721 m; 08°52'S, 77°54'W], MCZ 157229–31. Tingo, 2 km S and 15 km W Huaras, 12,000 ft. [3,658 m; 09°31'S, 77°35'W], MVZ 82311. [**HUANUCO:**] Agumiro, 11,500 ft. [3,506 m; 09°45'S, 76°48'W], FMNH 3546. Below Bosque Zapatogocha above Acomayo, ca. 7,600 ft. [2,317 m; approximately 09°46'S, 76°05'W], LSMUNS 27243. Base of Bosque Zapatogocha above Acomayo, ca. 8,400 ft. [2,561 m; approximately 09°46'S, 76°05'W], LSMUNS 27244.

Stenocercus ?chrysopygus

PERU: ANCASH: 1 km N and 12 km E Pariacoto, 8,500 ft. [2,591 m; 09°31'S, 77°45'W] MVZ 82308–10, 82346–50, 82393, 119232. 31 km (by road) E Pariacoto, 9,000 ft. [2,744 m; approximately 09°31'S, 77°40'W], LSMUNS 35236–39. Marca, 3,000 m [10°05'S, 77°30'W], BMNH 1900.6.20.20.

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NOTE ADDED IN PROOF: Jesús Cordova kindly provided MUSM catalog numbers for specimens referred to herein by "MUSM-JEC" field numbers. These are:

Stenocercus latebrosus:

JEC 10323 = MUSM 16743
 JEC 13014 = MUSM 17107
 JEC 13021 = MUSM 17105
 JEC 13022 = MUSM 17109
 JEC 13024 = MUSM 17110
 JEC 13027 = MUSM 17111
 JEC 13029 = MUSM 17112
 JEC 13836 = MUSM 17103
 JEC 13838 = MUSM 17104
 JEC 13839 = MUSM 17105
 JEC 13840 = MUSM 17106

Stenocercus stigmiosus:

JEC 10243 = MUSM 17113 (Holotype)
 JEC 12923 = MUSM 17114
 JEC 12924 = MUSM 17115
 JEC 12927 = MUSM 17116
 JEC 13000 = MUSM 17117
 JEC 10246 = MUSM 17118
 JEC 10247 = MUSM 17119